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With the year 1877, the first number of the AMERICAN VETERINARY REVIEW is issued.

This is done in accordance with a resolution passed at the last meeting of the United States Veterinary Medical Association—with the object of promoting an exchange of views amongst practitioners upon different medical subjects—also to record all cases of special interest as they may occur, and be reported by Veterinarians all over the Country.

No doubt this is an important step in American Veterinary History, and one of which Veterinary practitioners will take advantage. And as it is intended to have its material provided by articles written by Veterinary Surgeons in America, the Editor takes this opportunity to ask them for communications, papers, essays, etc. of interest; which will be published in the *Review*, and the original placed in the Archives of the Association.

The terms of subscription will be regulated by and in proportion to the costs of printing, diminished as much as possible, by professional advertisements; and as the number of copies will be limited, the Editor will be thankful for notices from those who may desire to subscribe to it. This first number costs 50c.

It will contain the papers read at Philadelphia, on the 13th Anniversary Meeting of the Association, viz.:

History and progress of Veterinary Medicine in the United States, by Prof. A. LIAUTARD, M. D. V. S.

Zymotic Diseases, by Prof. JAMES LAW, M. R. C. V. S. L.

Use of Stimulants in Diseases, by A. A. HOLCOMBE, D. V. S.

On the Causes of Some Chronic Lameness of the Foot, by THEOD. VERY, V. S.

And the report of a case of Erysipelatous Cellulitis, by E. F. THAYER, M. D. V. S.

On Sanitary Measures, by Prof. J. MCEACHRAN, M. R. C. V. S. L.

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HISTORY AND PROGRESS OF VETERINARY MEDICINE.

GENTLEMEN: When we look over the statistics which all of us can gather at the Agricultural Bureau in Washington, our attention cannot help but be attracted to the immense improvements, which have especially in late years rewarded the efforts of the agricultural people of this country, and also to closely observe what enormous progress we have made in breeding and raising of live stock. No less than 25 years ago our domestic animals were counted by about—in round figures, 5,000,000 horses, over 17,000,000 of cattle, 22,000,000 sheep and 30,000,000 of swine; and in our last census we find these figures raised to over 8,000,000 horses, 22,000,000 cattle, 28,000,000 sheep, 26,000,000 swine. Twenty-five years ago a capital of about 600,000,000 of dollars represented the value of the live stock of those days. To-day we lay on it a value of 1,600,000,000 dollars.

These statistics presented to you to-day, tell you the progress that the United States have made during the last 25 years, and give you an idea of what it has been in the last Century. Still while a short distance from this hall, on magnificent plots of ground, in immense buildings the United States have brought together all the different branches of science and art, so as to show the world our advancement during the past hundred years of our existence as a Nation, does it not strike your mind and that of any observer that in these immense gatherings, in these vast collections, in this great show of the new world, where everything is represented, where every science, art and trade has its place, Veterinary Medicine alone is absent. No matter if it prevents diseases, restores health, improves breeds of animals, regulates sanitary measures, protects trade of animals: no matter, if this immense fortune of \$1,600,000,000 owes much of its existence to veterinary art, to comparative medicine, in our Centennial buildings, in our exhibition, there is nothing pertaining to it, for I cannot consider anything the lame attempts which you may find in the Army department, or in the Agricultural department; both of which consist merely of the exhibition of a few pathological specimens. And why is this? Why is there no provision made in this Country to protect the live stock? With few exceptions there is no one ready to oppose the ravages of an epizootic. All our animals are thus left exposed to all the dangers of disease, and that because with all its importance amongst all professions the Veterinary is the only one, which has been sadly neglected in America, and which in this year of our Centennial Celebration has made the least progress.

On this occasion it has seemed to me proper to pass a general review of the advancement of Veterinary Medicine in the United States for the last century, by laying before you, what historical facts I have obtained relating to our humble and modest but nevertheless grand and important speciality. No doubt many points in connection with this paper will be found deficient from the lack of documents or records to be looked into. Again, to write such a history, probably a much older man and above all a much older

American Citizen would have been better qualified for the task, but if I cannot do justice to the subject as it deserves, I can vouch for the exactitude of many parts of it in the last 40 years. I feel in presenting you with these remarks, that I lay the foundation for a better history, to be written when our profession will occupy amongst Americans the place where it ought to be—*second to none*.

For much information which I will present you, I am indebted to the kindness of many amongst you: for much, I have carefully looked into periodicals, agricultural, scientific and even sporting papers: for many facts of the last sixteen years I can knowingly speak as I have been connected with all more or less; a fact which may oblige me to mention my name more than I would like to, and for which I beforehand must beg your pardon for fear of being accused of egotism.

As in the Old World it may be said that in the U. S., Veterinary science was first left in the darkness of the old days, and curiously enough, though with the opportunity of the experience of the Old Continent. America has not from the day of her Independence until late years taken any serious interest in the welfare of her domestic animals. She has spared nothing to improve her breed of horses whose speed is superior to any in the world. To improve her cattle, her sheep, her swine, she has borrowed from Europe, what she has been unable to find at home. But up to late years, relating to Veterinary cares nothing is to be found in any of the agricultural or sporting papers, with the exception only of a few prescriptions of more or less value, of more or less originality.

Indeed scarcely can the word Veterinary be found in print, and many of us remember having seen it spelled wrong, even by men who claimed to be regular members of the profession.

On inquiries made to the Agricultural Department in Washington, I am informed that beyond a number of works on Veterinary Science many of which I know to be of European origin, there is nothing in the archives of the Department referring to the practice of Veterinary Medicine or its standing in the Country.

In the work written by C. L. Flint, Secretary of the Board of Agriculture of Massachusetts, published in 1864, and called "Eighty years progress," we find that taking from the Revolutionary War to the great Rebellion every branch, science and art is treated, and all steps toward improvement are carefully noticed. Agriculture of course occupies an important place, and though it shows us all the improvements made on horses, on cattle, on sheep and on swine, not a word is said of the most important branch of agriculture, not a word is said of Veterinary cares beyond the citing of publications of a few works such as the Modern Horse Doctor of Dadd, sold at no less than 20,000 copies—of Youatt and Martin on cattle, of which 10,000 copies were disposed of in the United States, and of Youatt on the horse, of which 23,000 have been thrown all over the Continent; we all know the value of these works.

Sixty years ago New York City, then a small town, had no Veterinary practitioners. It is only about ten years after that John Rose, a graduate of Prussia came, established himself, and in a short time commanded a large practice—some ten years later however he was followed by C. C. Grice a graduate of London of 1826; then came R. H. Curtis, A. Lockhart, R. H. Budd, C. Pilgrim, all M. R. C. V. S. L., all of which may be called the pioneers of Veterinary Medicine in New York State. R. H. Budd who landed in 1831 combined the horse shoeing business with his practice; he left a little work called Practical Treatise on diseases of the foot—a work which had not only a good publication in England but reached in New York a second edition, and which contains many good points for the time it was written—nay, for our days.

In Massachusetts fifty years ago a Mr. Harrington, blacksmith was the leading man in Boston. Besides his trade and as a branch of it he took charge of all sick animals —his specialty was Theory and Practice. His workman John Davis who I understand is yet living, was the surgeon, and many a Sunday morning found him fleams and bleeding stick in hand busy practicing venesection. Sometimes, however difficult cases would be brought to the consultation, the Physician and Surgeon would be at a loss. But then they would send the patient to Roxbury, where a Dr. Brown kept a large infirmary for the purpose.

In Pennsylvania we have records older than those obtained from either New York or Massachusetts, in 1818 we find registered by D. Caldwell, Clerk of the Eastern District of Pennsylvania, that "on the 23d day of June, 1818, James Carver hath deposited in this office the title of a book, the right whereof he claims as author, in the words following: The Farrier's Magazine or Archives of Veterinary Science containing the Anatomy, "Physiology and Pathology of the horse and other domestic quadrupeds, and compiled "from the lectures, and practice of Veterinary Colleges of London, France, Germany, "Russia and British India—by James Carver, Veterinary Surgeon, Master of Equitation "and corresponding Member of the London Veterinary Medical Society and the College of India." The title of the work and those of the author tell of the value of the whole subject, which besides an appeal to the people of Pennsylvania, to the public at large, a dedication and advertisement contains a little over a hundred pages of matter of no interest. At the end of this work as an appendix, Mr. J. Carver makes the announcement of a series of books which he will publish, on stable duty, on food, on labour, on epidemic diseases, and many others, which if printed have not come to my notice. Mr. J. Minchener, who must occupy a very first place amongst the Veterinarians of Pennsylvania, he having been there for many years, nearly fifty, and by his ability being considered as one of the leading men of that State, must well remember the days of James Carver.

In New Jersey, we know of nothing pertaining to Veterinary Medicine beyond the fact that no regular graduate could be found there until within the last two or three years.

In all probability this general condition prevailed all over the Country, and it is to be supposed that with a few exceptions, the practice of Veterinary Medicine was left in the hands of ignorant men, stablemen or blacksmiths, and that the absurd and nonsensical notions which we even find in our own days, were to a great extent the treatment of those times. Who amongst us has not heard of the swenied shoulder, of the chest, founder; of the worm of the dog's tail, of the horn ailment, etc., etc.

But that state of affairs could certainly not forever last on our continent; for us the live stock is not only a beast representing so much capital, he is one of our fancies, of our distraction, he is one of our pets, I may say, and generous as we are, if not for science but for humanity, little by little the need of the Veterinarians of education has slowly been gaining ground, and there we find Massachusetts, the first at the head of the onward movement.

In 1835, C. M. Wood had arrived in Boston, and there by his activity, his energy, soon after working as an assistant to some smith, raised himself to a high position amongst his citizens as a Veterinary practitioner. In 1849, G. H. Dadd, neither a graduate of Human or Veterinary Medicine (at least I find no record of these degrees.) started himself as Veterinary Surgeon in Boston advertising lists of medicines for sale. In 1851 started the publication of a Veterinary Journal, which

lasted for one year, but was revived in 1855—at that time he published the first edition of the Modern Horse Doctor, the advocate of Veterinary reform, the outlines of Anatomy and Physiology of the horse. In that year of 1855 he obtained from the legislature a charter, establishing the first Veterinary College in America under the name of the Boston Veterinary Institute, with a Medical Staff, consisting of

G. H. DADD, - in the chair of Anatomy and Physiology.
C. M. WOOD, - do. Theory and Practice of Medicine and Surgery.
R. WOOD, - do. Practice on Cattle.
A. S. COPEMAN, - do. Chemistry and Pharmacy.

This Faculty formed also the Corresponding Staff of the AMERICAN VETERINARY JOURNAL, in which many interesting articles, especially from the pen of C. M. Wood can be found.

Why did this first step fail? Why did the Institute live but a short time after its birth? And why also did the Journal stop its publication after living about three years after its resurrection, are facts which I have not been able to establish with certainty. But these are not the only facts to be considered with the advancement of Veterinary Medicine in Massachusetts. I would not be doing justice to one of her practitioners, should I omit to mention the name of E. F. Thayer, who had established himself in Boston in 1854, and brought himself to such a position that we find him in 1859 receiving the appointment of Cattle Commissioner to investigate the disease known as pleuro-pneumonia; and by him principally was the whole work of the investigation carried on. His work proved so satisfactory, and his ability and straightforwardness and close observation had been so well appreciated that we find him again in 1861 receiving another appointment to work upon the same disease—in 1868 we see him seated amongst the delegates of the State Commission, who had assembled to consider the effects, danger and sanitary measures concerning the appearance of Texas Fever—and at last we find him also holding another appointment in 1870 to take measures to protect the State against the foot and mouth disease, the Epizootic Aphtha. In 1858 Massachusetts is again at the head of the States, it forms at Boston the Veterinary Medical Association, with C. M. Wood as President, with E. F. Thayer as Treasurer—this was probably the first Veterinary Association formed in this Country.

New York during that time had been watching the efforts of Massachusetts, she had seen the Boston Veterinary Institute born and nothing more. She had witnessed the death of the American Veterinary Journal, and jealous of being on the first ground, and probably thinking she had benefited by the failure of her sister State, in 1857 she applied to her legislature and obtained for her a charter incorporating and legalizing the New York College Veterinary Surgeons. In that year assisted by several gentlemen, Dr. John Busted obtained from the Legislature of New York a Charter granted to the New York College of Veterinary Surgeons. Shortly afterwards by private subscriptions, a handsome building was erected in West 23d Street, near 6th Avenue, and all seemed fair to go on well, Dr. Busted and Mr. Ralston, M. R. C. V. S. L. an ex-Indian Veterinarian constituted the faculty, and incomplete as this was, it was the first steps towards the regular establishment of the School; but when the time came for the lectures the faculty failed in its duties, and shortly afterwards the college was closed up, and the whole place used for a livery stable, which was destroyed in 1865 or 66 by fire. It was to be regretted that this attempt proved such a failure, for properly speaking everything in that enterprise looked like success. Dr. Busted, whose name by the way, must necessarily be connected with any

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thing pertaining to the establishment of Veterinary Medicine, was not discouraged however by this first attempt. Having found much difficulty in bringing the Board of Trustees together, application was made for an amendment, which was granted to the same Board in 1862. Everything looked bright once more, Dr. Busteed was very enthusiastic, and there was nothing lacking but a building to have a school started, which however was soon obtained at 205 Lexington Avenue, where Dr. Liautard had been engaged in private practice for years. In 1864 the faculty was organized as follows:

DR. BUSTEED, Professor of Materia Medica and Therapeutics.
 DR. LIAUTARD, Lecturer on Comparative Anatomy and Surgery.
 DR. LARGE, do. Physiology.
 MR. COPEMAN, do. Theory and Practice.

These Lectureships were given only temporarily until, if found capable, Professorships were to be granted afterwards.

Now, Gentlemen, the New York College of Veterinary Surgeons was fully organized. Circulars were issued. The first session was held in 1864 and 65; the first year no less than seven students were attending the lectures, when the sudden and permanent retirement of one of the gentlemen nearly caused a difficulty in the carrying on of the Institution. In 1866 Dr. Weisse was appointed as Lecturer on Chemistry and Materia Medica and Therapeutics in place of Dr. Busteed, who takes the lectures on Histology. In 1868 Dr. L. Mason is added to the faculty as Professor of Physiology in place of Dr. Large, who had been filling the department of Practice, in place of the gentleman who left his course unfinished. The first session 1869 and 70, saw another change, another re-organization of the faculty, Dr. Busteed retired from active work altogether, and the corps of Professors re-arranged, as follows, remaining until 1875:

DR. A. LIAUTARD, Professor of Anatomy and Surgery.
 DR. A. LARGE, do. Practice.
 DR. F. D. WEISSE, do. Surgical Pathology.
 DR. A. W. STEIN, do. Physiology and Histology.
 DR. S. R. PERCY, do. Chemistry, Materia Medica and Therapeutics.
 DR. J. L. ROBERTSON, do. Cattle Pathology and Obstetrics.

The success attending the Institution was great. The class which had first been very small,—in 1868 there was but one student for the whole session,—soon increased until 1873, when 18 students had matriculated: but unfortunately the N. Y. C. V. S. was doomed to the same fate as its predecessors. About that time difficulties arose in the Board of Trustees giving rise to legal controversy, and the gentleman who had been up to this time the father of the Institution by his oversights brought on by sickness and ill judgement, became the cause of its death; through his conduct the faculty in consequence of the trouble in the Board of Trustees, resigned in a body. Dr. Liautard who had entire control of the school, who had built his clinical department successfully as superintendent, and after as Chief Veterinary Surgeon, resigned also, and from that moment I may say the N. Y. C. V. S. had come to an end. The lectures were no more delivered, the hospital soon had to close its doors, the property was sold to satisfy indebtedness, all that after the session of 1874-75, after an existence of ten years.

I may be allowed here to correct some statements which found their way into the Newspapers, in an obituary article of Dr. Busteed and C. C. Grice, where the former was called the founder and sustainer with his own means of the school, and the second

one of the founders also. To Dr. Busteed is due the foundation of the school, but the college sustained itself by its clinical and outside practice. C. C. Grice had no other connection with the College, but being one of its censors, a position which he occupied with two or three other members of the profession.

Now, in the same direction Pennsylvania came forward. In 1866 the Pennsylvania College of Veterinary Surgeons obtained its Charter, and issued its first circular, with the faculty organized as follows:

ISAIAH MILCHENER, in the chair of Theory and Practice.

R. JENNINGS, do. do. Pathology and Surgery.

M. W. BIRCH, do. do. Materia Medica and Pharmacy.

J. M. CORAT, do. do. Anatomy and Physiology.

and with a corps of clinical teachers: (J. B. RAYNOR and T. J. CORBYN.)

But like Massachusetts, this school was doomed to no real existence—like her also, she was a school merely in name, she had no building, no college proper; I am not sure that regular lectures were ever given, though they had use of the rooms of the Agricultural Society. But nevertheless we may meet with many Diplomas granted from that school, which like a few, headed Boston Veterinary Institute, have been unjustly and illegally granted, and may be considered worthless.

These successive efforts in behalf of advancement in these three States, unsuccessful as they had been in two, stirred up the enthusiasm of the practitioners over the country, and in 1863 in response to a call made through the newspapers, but originally started by the initiative of the Philadelphians, many persons interested in Veterinary Medicine, assembled at the Astor House in New York, on the 9th of June, and organized the United States Veterinary Medical Association.

Main, Pennsylvania, Delaware, Ohio, Massachusetts, New York and New Jersey, were all prompt to answer to the call, and no less than forty gentlemen placed their names on the first roll. The organization took two days, and after the drafting of the Constitution and By-Laws, Dr. J. Stickney, M. R. C. V. S. L. was unanimously elected its first president.

Meetings have been held ever since yearly, and lately semi-yearly in Boston and New York, and many interesting papers read, amongst which I may mention those of A. S. Copeman, a Compilation on Vital forces—of C. M. Wood on Veterinary Education—of Dr. Large on Cerebro-spinal Meningitis—of Dr. Liautard on the same subject and on Chronicles,—of foreign papers of E. F. Thayer on Parotid Salivary fistula and on Texas fever.

To these readings has the work of Association so far been limited, not from the want of willingness to work, or of professional ambition, but from lack of public interest and support. Nevertheless, it is bound to be one day an important scientific organization, its members number to-day in its thirteenth anniversary nearly forty, who are all practitioners of Veterinary Medicine, spread all over the country and are well represented to-day in this hall.

The importance of Veterinary science now begins to be felt all over the United States, and its vital influence upon the general welfare of live stock is soon recognized by Agricultural schools. In 1868 the Illinois Industrial University which had been chartered in 1867, had amongst its departments a school of Agriculture, and amongst its branches a veterinary course, and an endowment of \$3,000 for a Veterinary Hall, stable, etc. F. W. Prentice, M. R. C. V. S. L. is appointed Professor at the chair of Veterinary Science. The curriculum covers the field of veterinary studies. Sick

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animals are brought in from the neighborhood and treated free of charge for the benefit of the class. However the purpose of the school is not to give a full Veterinary education, but at the same time several students have become, I understand, good practitioners. The principal lectures dwell on Entomology, Physiology and general Veterinary Science.

In the same year 1868, Cornell University appreciates the need of such a branch in her curriculum, and by the example of what she sees in the European Agricultural Schools, she goes to England and appoints through President White, Professor James Law, M. R. C. V. S. L., and already the author of a work, the Anatomy of Domestic Animals, to the chair of Veterinary Medicine. As Professor Law reached America we had then the excitement caused by the appearance of the Texas fever brought on this side of the Continent, and it was at the post-mortem of a bullock killed at the Abattoir in New York, that I had the pleasure of meeting him. His remarks on that disease are found in the report of the Health Board of 1869. Filling the position of Veterinary Editor of the New York Weekly Tribune, he is soon appointed Consulting Veterinary Surgeon to the Agricultural Society of New York State. At Cornell, the chair of Veterinary Medicine covers an immense field, and though it claims to work somewhat on the same principle as the school of Grignon in France, its curriculum is most extensive.

The regular course for students in Agriculture and Natural History embraces First. Five lectures per week, extending over the academic year.
Second. Laboratory work on bones, skeletons, clastic models, pathological preparations and parasites.

Third. Clinical instruction on the cases occurring in practice. The text books and books of reference, are of the most recent date, all modern European authorities are brought forward.

For the degree of Bachelor of Veterinary Science, a four years course is provided for, the last two years of which are entirely devoted to special veterinary studies, and embrace a most complete curriculum.

Anatomy, Physiology, Histology, Zootechny, Hygiene, Botany, Toxicology, and Pharmacy, with Therapeutics being in the hands of some of the teachers of the Agricultural Department of the University.

To the chair of Veterinary Medicine are left—Principles and Practice, Surgery, Obstetrics, Surgical Pathology and Anatomy, Examination of Soundness, Principles of Shoeing, physiological and pathological.

Although this may seem a very heavy load to carry for that department, it must be remembered that four years' study is required, followed by a satisfactory examination, thesis, etc., before the degree of D. V. M. (Doctor of Veterinary Medicine) is granted by Cornell University.

In later years the Agricultural School of Amherst tried to follow the same road, and, in 1869, J. Stickney, M. R. C. V. S. L., occupied the position of Lecturer on Diseases of Domestic Animals. In 1873, Dr. Noah Cressy, a graduate of human medicine, was appointed to fill the same department. The curriculum is much more limited. Although it includes lectures on Comparative Anatomy, General Pathology, Veterinary Medicine, and Clinical Surgery, thus giving a general outline of veterinary practice in connection with agricultural education, I understand the attendance to this instruction is quite small.

Virginia, in the Washington and Lee University, has recently created a department

ment of Veterinary Medicine, and has some money endowed for the improvement of this branch of Agricultural Studies. Beyond the appointment of Colonel McCullough, who claims no right to the teaching of veterinary medicine, further than generalities and Comparative Anatomy, I am not aware that any professor has been appointed to the chair yet.

The Ohio Agricultural and Mechanical College, founded in 1862 and opened in 1873, has a chair of agriculture, with Professor Norton S. Townsend, M. D., as teacher.

The study of Anatomy is worked practically in the dissecting room upon smaller animals, such as sheep, pigs, dogs, while the horse and ox are dissected whenever opportunities offer. The lectures on Diseases of Animals—medical and surgical treatment—are occupying the second and third term of the second and third year of Agriculture. No degree is given as Veterinary Surgeon.

The Maryland Agricultural College has lectures delivered to its class on Veterinary Medicine and Surgery, with Youatt and Martin on the Horse and Cattle as text books.

The Agricultural College of Pennsylvania has lectures on Veterinary Science delivered to the senior students of the sophomore class.

The course on Agriculture at Dartmouth College, New Hampshire, has, in her second term, a series of lectures on Human and Comparative Physiology and Veterinary Medicine and Surgery.

The Iowa State Agricultural College announces for the second term of senior students a course of lectures on Veterinary Science and Practice.

The State Agricultural College of Vermont, in its last circular, says, that arrangements have been made by which hereafter a series of lectures on Veterinary Science and Practice will be given as may be needed.

Some years ago, the Bussey Institute of Boston had a chair of Veterinary Medicine filled by Dr. Sledge, which, however, had little attendance.

In 1868, we all remember the excitement caused by the appearance of Texas fever in cattle on this side of the country. Cattle were dying rapidly. The whole country was alarmed. So sudden did it appear that scarcely any one was ready to meet the emergency. Every one who had an official character was ignorant and at a loss as to what the disease was, its nature, and what sanitary measures were necessary to check its ravages. Health Boards, composed of physicians having no official veterinarian, were in the dark, and many dollars were spent to satisfy the public which could have been saved if veterinary surgeons, who had no difficulty in recognizing the carbuncular nature of the disease, had been connected with those boards. At that time Professor J. Gamgee was in this country trying to introduce a process for preserving meats; the government took advantage of his visit and had him appointed special commissioner to investigate the disease; and it is to be regretted that the Professor did not seize that opportunity to bring the veterinary profession forward more than he did, and which he could have done by the prestige which surrounded his name and by his well-known ability.

This appointment and its recognition by the general government, had some influence however, upon the importance of veterinary science in connection with Health Board, and it is then that we see the appointment of E. F. Thayer in Massachusetts—of A. Liautard in New York—of A. Large in Brooklyn—of N. Cressy in Connecticut; and from 1872, when their work and knowledge began to be appreciated, their services are slowly getting a better recognition. The Epizootic of 1872 has been for

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them an opportunity, which in their official capacity has found its way into the history of that great invasion as recorded in the different health reports.

Even not more than two or three years ago, I will report to you, so as to show how little was known of the requirements of veterinarians, and facts of some importance which took place in Congress at Washington, which, I think, will be found interesting. They were taken from the *Atlantic Monthly*, of September, 1869. While speaking of the lobby in Washington the author describes a scene which has much bearing upon the standing of the Veterinary Profession. I now read from the monthly :

" But to my scene. One afternoon in February last, while the House in Committee of the Whole was working its slow and toilsome way down, item after item, through the Army Appropriation Bill, under the leadership of the alert and vigorous Mr. Blaine, now the Speaker of the House, a clause of the bill was about to pass without debate, when Mr. Fernando Wood, of New York, rose and offered the following curious amendment : ' But no part of the sum [appropriated] shall be paid to Alexander Dunbar for his alleged discovery of the mode of treatment of horses' feet.' There had been no mention of the said Dunbar in the clause, nor of his mode of treating horses' feet, nor of any other system of treatment ; and the very name of the man was evidently unknown to the House. Mr. Wood proceeded to explain that the Secretary of War, General Schofield, had made a contract (authorized by act of Congress) with Alexander Dunbar, by which the latter was to receive twenty-five thousand dollars for imparting his system of horse-shoeing and hoof-treatment to the veterinary surgeons and cavalry blacksmiths of the army. ' And I am advised,' continued the member from New York, ' by those who are judges of that subject, that the man is totally ignorant, that he knows nothing about the diseases of horses' feet, and that he rather perpetrates injury upon the poor animals than produces any benefit to them.'

" Fernando Wood, in his air and demeanor, is one of the most dignified and impressive members of the House. He attends carefully to his dress ; and as to his ' deportment,' Mr. Turveydrop would contemplate him with approval. For such a personage to rise in his place, and, in a measured, serene manner, discourse thus upon a subject of which no man on the floor knew anything whatever, could not fail to produce some effect. Mr. Blaine could only say, that he had never heard the name of Alexander Dunbar before ; but that he thought the amendment cast a severe reflection upon the Secretary of War. Mr. Wood insisting, the amendment was finally amended so as to make the exclusion apply to the whole Appropriation Bill ; and thus cut off the unknown Dunbar entirely ; and in this form, I believe, it passed the Committee of the Whole, and was prepared for submission to the House ; at least, Mr. Wood agreed to withdraw his amendment in order to amend it in the way described.

" It did so happen that there was a person sitting in a commodious corner of the reporters' gallery, who, though a stranger to Mr. Dunbar, and singularly ignorant of horses, yet knew all about the Dunbar system and its discoverer. That person, strange to relate, was myself ; and if it had not been a little out of order, I should have shouted a few words of explanation over the vast expanse below. Rising superior to this temptation, and thus avoiding the attention of the sergeant-at-arms, I constituted myself a Dunbar lobby, and imparted to as many members as possible some of the facts which I am now about to communicate to the reader. Some years since, the mysterious Alexander Dunbar, an honest, observant farmer and contractor, of Canada, was driving a lame horse on a hilly road. He noticed that the horse was lamest when

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going down hill, but not lame at all going up hill. Having observed this peculiarity for several miles, he began to speculate upon the cause; and by carefully examining the action of the horses' feet, he discovered it. The blacksmith had pared the hoof on the wrong principle,—cutting it close where it ought to have been left thick, and leaving it unpared where nature constantly produces a redundancy. He tried his hand at remedying the mistake. He cut boldly at the parts that were in excess, and the lameness was cured! A few judicious cuts with a sharp knife, and a shoe adapted to the natural growth of the hoof,—this is all there is of the Dunbar system, which was elaborated by the mystical Alexander after some years of observation and experiment, suggested by this incident. He found many cases of lameness of years' standing could be cured radically and almost instantly by simply paring the hoof aright and altering the shoe.

"We have in New York an enthusiast on the structure of the horse,—Mr. Robert Bonner, whose stables contain six of the fastest trotting-horses in the world. He was led to study the anatomy of the horse by endeavoring to get at the reason why some horses can trot in 2.20 farther than an ordinary nag can in five minutes. He was curious to know just where the trotting talent lies; and this led to other inquiries. Hearing by chance of Mr. Dunbar's discovery, he investigated it most thoroughly, and came to the conclusion that the Dunbar system was founded on the eternal nature of things. I suppose that, during the last three years, Mr. Bonner has, with his own hands, pared the hoofs of more than fifty horses on the Dunbar plan, and thereby cured a dozen cases of lameness supposed to be incurable. In his great desire to test the discovery, he has traveled a hundred miles sometimes for the sole purpose of having a lame horse shod in the Dunbar style, very frequently paring the hoofs himself. Recently the discoverer has been amongst us, and his system, after having been adopted in several of the largest stables in the United States, was introduced into the army; but, as usual, his success was damage to other men, particularly to the proprietors of a patent horseshoe, which Mr. Dunbar was compelled to say was not made in accordance with the eternal nature of things. Hence a patent horseshoe lobby! Hence Mr. Fernando Wood's strange amendment. Mr. Dunbar's friends rallied, however, in time to enlighten the House and no harm was done."

This is an error. There was some harm done; for the appropriation to Mr. Dunbar was reduced by more than one half. There is, however, no comment in relation to this article. Who was wrong? Certainly not Mr. Fernando Wood.

And I doubt if any of the veterinarians of these days knew that in Congress there was a gentleman who could distinguish between true veterinary knowledge and that of a Mr. Dunbar, whose appointment we find condemned in the minutes of the United States Veterinary Medical Association as follows:—"Moved and seconded, That the United States Veterinary Medical Association as a body protests against the appointment by the general government, through the recommendation of General Grant, of Mr. Dunbar as a clinical lecturer to the army veterinary surgeons and farriers, for an alleged discovery of a mode of treatment of the diseases of horses' feet, the operation being no discovery but a regeneration of an obsolete idea, and worthy of the attention and patronage of the Society for the Prevention of Cruelty to Animals, it being an evidence of both ignorance and barbarity. Furthermore, Mr. Dunbar has no claims whatever to the title of veterinary surgeon, either by education or professional association."

During the same year an important appeal was made to Congress by Dr. John Busteed, then working with enthusiasm as President of the New York College of

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Veterinary Surgeons. For several days he remained in Washington and worked hard to awaken some good feeling amongst congressmen in favor of veterinary medicine. His appeal to the members of the House of Representatives was short but very much to the point; and when, after laying before the House, the wealth of our country, the dangers to which our live stock were exposed, the risk which surrounds it by disease—when he then said to them, What are the means best adapted to check these evils? Have we well-educated veterinary surgeons? Have we veterinary schools? Have we, in the Civil or Military departments of the Government, or in our Board of Health, a sufficient number of educated veterinary surgeons to hold in check, or to advise us, if an epizootic should appear, or have we any at all? The House was then, for the time being, well up to the importance of the subject. Dr. Busteed's appeal was certainly going to be acted upon: he could return home—so he did—and that was the last of it. Once more veterinary medicine was doomed by the very ones whose duty it was to bring it forward.

Legislatures had been appealed to without success—Congress had not kept its promises. Let us see now what the Medical Profession itself was willing to do, and what it has done for its sister branch.

In 1870, Dr. Stein, then filling the chair of Physiology in the N. Y. C. V. S., received from the New York County Medical Society the appointment of delegate to the American Medical Society meeting in Washington.

Instructed and well prepared to treat of a subject, to which by his own profession he might be somewhat a stranger, he went to the meeting, and there, after much labor, accomplished an important step, viz., the professional recognition of the Veterinary by human medicine.

Let me repeat Dr. Stein's statement relating to the whole affair. He says: "Prof. Thomas Antisell had prepared an elaborate and highly interesting report upon Veterinary Colleges abroad, their extent, work, etc. After partial reading of this report it was, upon motion, referred to the committee on publication; I being the only one I believe opposing the motion. The next day I asked a gentleman (who had voted in the affirmative, or perhaps not voted at all) to move a reconsideration of the motion, referring to Dr. Antisell's paper to the committee on publication, which after some little discussion was carried. I then offered a resolution that the paper and the whole subject of Veterinary Medicine be referred to a special committee to report the same meeting.—Carried.

The President appointed Drs. S. D. Gross, Thos. Antisell, and myself as a committee; I then put in writing the following preamble and resolution, and then submitted them to Profs. Gross and Antisell, both concurring in the sentiment thereof.

Whereas, We regard the cultivation of Veterinary Science of the most vital importance, not only to the advancement of human medicine, but also for reasons of political economy, and agricultural interest.

Resolved, *First*, That we recommend the State and County Medical Societies to use their influence in the establishment and support of Veterinary Schools in their respective States.

Second, That they ask the Governors of their respective States to recommend in their messages to their Legislatures the importance of establishing Veterinary Colleges, and that appropriations be made to support them.

Third, That they recommend the Governor and the State Legislature when organizing Boards of Health, to appoint one or more thoroughly educated Veterinary Surgeons to be associated as commissioners with other medical officers.

Resolved. That we recommend the employment of Veterinary Surgeons in the Army, and one in the Agricultural Department, with rank and pay of other medical officers. The following day the resolutions were read by the Secretary, and the vote being taken, was lost. There was very little doubt that the resolutions were lost by a large majority, but notwithstanding I asked for a decision of the vote. Before the decision was called, I took the floor and amid considerable opposition, debate being out of order, I asked it as a special consideration to be allowed to make a few remarks relative to the above resolutions before another vote was taken, which was granted.

"I thereupon gave a brief account of the progress of medicine in regard to its relation to Comparative Physiology and Pathology, showing how every advance in human medicine, was the result of previous experiment upon lower animals, and after citing the illustrious names of those who had engaged in this great work, and in Veterinary Science in general, and then giving a practical turn to my concluding remarks in reference to the needs of Veterinary Colleges, and educated Veterinarians in agricultural interests, and in the United States Army, a new light seemed to dawn upon the minds of many present, and the resolutions being taken up serratim, the three first were adopted unanimously, the fourth, amended by Dr. Otis, U. S. A. as follows:

"That we recommend the government to appoint a Professor of Veterinary Medicine and Surgery to be attached to the Agricultural Bureau with a suitable salary,—adopted (communications were afterwards received asking to recommend persons for said appointment); Dr. Mussy of Ohio, immortalized himself by moving to lay the whole subject on the table, which it is needless to say was lost.

"On motion the preamble and resolutions were then adopted as a whole.

"I should say that Prof. Antisell was indignant in regard to the summary manner in which his report was disposed of by the association, and although I don't know that he expressed himself to any one but myself in reference to it. He refused to give it to the committee on publication. Not wishing that the paper should be entirely lost, I had it referred to the section on Surgery and Anatomy for the discussion, but for some reasons Dr. Antisell, I believed failed to appear. This ended a memorable event in the history of Veterinary education.

"In 1872 in Philadelphia, desirous to keep the subject of Veterinary Education warm and before the medical profession, I offered the following:

"Whereas. It has long since been recognized that diseases of a dangerous and fatal nature are transferable from animals to man, and that certain zymotic affections which are common to both man and animals, do very frequently manifest themselves first in the latter, and subsequently on man. Thus warning us that to be indifferent to the condition of the inferior animals, is to introduce and create centres of disease amongst ourselves.

"Resolved that a committee be appointed to ascertain what measures can be instituted to prevent the extension of such diseases to man? And what sanitary measures can be effected to arrest the progress of such diseases in animals? Carried.

"The President appointed as a committee—Dr. A. Stein of New York, Dr. G. Sutton of Indiana, Dr. S. D. Gross of Pennsylvania, I regret that because of the distance, the next meeting being at St. Louis, I was unable to be present and presume the matter went by default." This Gentlemen, was in 1872. This committee has not yet been discharged—where is the report? To us veterinarians belongs the final task to make the inquiry, as though there was much difficulty in carrying the motion

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through, still it was carried. And that shows that it is amongst physicians that we are likely to receive greater assistance and recognition than any where else, and certainly we could not address ourselves to a more honorable or important body. Our own people, those whose interest we protect, the Agriculturalists, had for some reason or other declined our offer. At the suggestion of Dr. Liautard in 1872, the after resolutions adopted in 1870 by the American Veterinary Medical Association, the N. Y. C. V. S. directed to the Officers of each State and County Medical Society, and to the Officers of each State and County Agricultural Associations, circulars offering one full and one-half Scholarships to the different societies and associations,—and, must I say it, this generous offer of the faculty of the New York College of Veterinary Surgeons was not noticed,—not a single answer, not a single response to the call.

But then Gentlemen we are brought down to our own later days; we have seen that slowly but surely the interest in Veterinary Medicine has increased, and no doubt the New York College of Veterinary Surgeons has done much to advance the profession in this Country. How unfortunate it was, as I already stated its life was cut short; we have seen how after ten year's hard labor, the faculty were obliged to resign. And now we have arrived at 1875, in March at the end of the last Session, when our graduates are receiving the last diplomas of their dying Alma Mater, and with this rises another school—the American Veterinary College.

Encouraged by the success which had rewarded their efforts, and especially satisfied of the importance of such an institution, and of the certain success which would follow if properly managed, and above all if worked with a professional and not a personal interest in view, and well prepared by their ten years previous labor, the different members of the faculty of the old school at once made up their minds to continue the attempt. As soon as they left the N. Y. C. V. S., they induced gentlemen to organize a Board of Trustees and to obtain a charter for the American Veterinary College.

This Charter was obtained through the general law of the State of New York, passed in 1848, and amended in 1870, which gave the Supreme Court the right to grant charters to Medical Institutions, etc., and in April of the same year two months after the close of the old school, the American Veterinary College issued their first circulars with an increased corps of teachers. Professors Liautard, Large, Robertson, Stein, Weisse, Percy and Satterlee filling the different chairs.

Gentlemen, we have seen those names already and they must remain connected with the history of our profession. It would not become me to remind you of what little I have done, but the others must certainly find their place amongst the first in establishing Veterinary Schools in America. If the N. Y. C. V. S. owed its birth to an act of legislature obtained through the exertions of Dr. John Busteed, to the faculty it owed its life of ten years. Speaking of the American Veterinary College, Fleming says it is the old school rajeunie,—this is very true.

Opening in a new building, purchased for that purpose by Dr. Liautard, who, after fitting it up for Hospital purposes, with lecture and dissecting rooms, offered it for the use of the faculty, it possesses all the accommodations which are necessary in such an undertaking.

Dr. Liautard's collection of over six hundred Anatomical and Pathological specimens is of great value to illustrate the lectures, and the Museum of the College proper, which by the way, is formed by donations from different members of the profession all over the country, is called to form one of the finest exhibitions on the Continent. A library is also to be collected with the assistance of the Alumni of the school.

Amongst the great inducements to the students is the continuation of the free clinics, which I had started three years ago at the New York Veterinary Dispensary. These clinics which are held free of charge to the poor twice a week, bring before the class all forms of diseases in their different stages.

At the opening of the first session, the class which had been left the previous spring, at the old school was soon increased by new comers, and this proved well enough, that the step taken was not a wrong one, and that the efforts of the Board of Professors were fully appreciated—during that first session, twenty Matriculants occupied seats in the lecture room, and all the old students came to finish their studies.

At the end of the session A. A. Holcombe of New Jersey, J. S. Saunders of Massachusetts, C. W. Crowley of Illinois; and Jas. Corlies of New Jersey, became the Alumni of the College, and soon were joined by some of our graduates of the old school, who made application, and were granted ad eundem Diplomas. J. L. Robertson of New York, C. Michener of New Jersey, J. D. Hopkins of New York, R. P. Blakely of New York, L. T. Bell of Virginia, C. H. Stocker of Massachusetts, J. Myers of Ohio, P. Nostrand of New York, E. Travers of New York, J. B. Cosgrove of Massachusetts, C. Burden of New York, and W. Dougherty of New York.

To-day, at the moment of opening its second session the American Veterinary College is in glorious condition, and promises to be a permanent and successful Institution.

Towards the end of 1874, the Veterinarians of New York City organized themselves into a society, which it is to be hoped will form a good nucleus for a State Association.

In 1875, gratifying news came to us from the West, from St. Louis, a rumor which had found its way into the papers, had become a reality. The St. Louis Veterinary College was incorporated and ready to admit students. From the circular which it has issued, it seems to be covering a curriculum somewhat analogous to that of the American Veterinary College, though it does not give any of the requirements for graduation. The faculty is composed of five physicians, and two Veterinary Practitioners. To that new School let us wish success.

This general review shows us that the importance of the Veterinary Science is well understood by the Agricultural Institutions of this Continent, and their teachings must necessarily prove beneficial to the profession. We have but two schools it is true where all the branches are taken up, but it is to be hoped that before many years others will have sprung up all over the land.

In the way of the American Veterinary College there is but one fear, and it is that by many and with some reason it is considered a private undertaking, and whether as such it can succeed or not is a question which time alone can solve. Still I may be allowed to say, that I feel satisfied, even with this drawback, that this Institution will keep on doing its noble work, and exert itself to the utmost to rivalize, but be friendly with any others which will have in view the same object, viz., the cultivation and elevation of Veterinary Medicine, the protection of the health of the County represented by its live stock.

In relation to Military Veterinary Science in the United States, I have but little to say. As poor as the position of the Veterinarian is in the European Armies, it is worse in the United States. By an act of the War Department of March 30th, 1863, each regiment of cavalry was allowed one Veterinary Surgeon with the rank of sergeant-major, and a fixed compensation of seventy-five dollars per month. This act was

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amended by another of July 28th, 1866, by which a Veterinary Surgeon is to be attached to each regiment, with a compensation of one hundred dollars per month. In the army register it is erroneously stated that the veterinarians are reckoned amongst the enlisted men, and not amongst the officers. Veterinary Surgeons are appointed by the Secretary of War, and I am informed by the Chief Clerk of the War Department are considered civilians.

There are ten regiments of cavalry and five of artillery in the United States Army, and still only nine Veterinary Surgeons are on duty.

Now, to finish, one word as to the literature of American Veterinary Medicine—we are told that at Washington, in the Agricultural Department, many Works are found relating to the Veterinary art. But we know those to be mostly of European origin. Amongst the American Works of more or less value, we find that of James Carver in 1818, of R. H. Budd in 1831, of Dadd in 1856; his Anatomy, his Veterinary Journal, his Modern Horse Doctor. Besides these, we have the publications of R. Jennings and McClure on practice; the American Farrier of W. C. Holme in 1852. Hints to Breeders by Herbert in 1859; the translation of Geunon Milch Cows, by N. P. Trisk in 1862; the American Farmer's Horse by Robert Stewart, M. D. V. S in 1866; the Percheron Horse by Chas. Du Hays in 1868; the American Cattle, History, Breeding, etc., by L. F. Allen in the same year; the Appendix to Stonehenge by A. Large in 1869; J. Harris on the Pig, 1870; J. A. Reason on the Hog about the same time; Hanover on the law of Horses in 1872; with a second edition in 1875; Bouley's Hydrophobia, translated by A. F. Liatard in 1874; and last, but not least, the Farmer's Veterinary Adviser by J. Law in 1876.

Probably many others have been printed and may be collected in the library of Agricultural investigations.

Now gentlemen I have done, I tried in this paper which I regret to say has kept your attention longer than I expected, to show you the progress of Veterinary Medicine in the United States, and to impress your mind with what little changes have taken place since Independence day.

Still we must be satisfied by degree, the Veterinarian of education comes ahead, and though it may be many years yet before the "Professional Veterinarian and the Veterinary Professor," the "Homeopathic Veterinary Surgeon,"—"the one who trains colts"—"the Homeopathic Mesmeric and Psychological Veterinary Surgeon," "the Allopathic and Homeopathic Veterinary Surgeon," "the Voluntary Epidemiological Missionary," "the Horse Dentist," who performs dental operations on horses satisfactory to horse and owner—before all these unscrupulous empirics are prevented from prostituting our noble profession; there is for us but one thing to do, look, keep up to the work, watch, and remain united, as we are to-day.

If *Union Means Strength*, the influence that a meeting such as the one held now in this room by the United States Veterinary Medical Association must be of a great weight in the future advancement of Veterinary Medicine in the United States.

ZYMOTIC DISEASES.

Impressed as I am with a sense of the great national importance of a better attention to the Zymotic diseases of animals, I feel that as a body-representation of the Veterinary Profession, we would be untrue to ourselves and the nations of North America if we failed to give out an earnest statement of this subject. In offering a few hurried words on this topic, I prefer to use the word *Zymotic* rather than *contagious* or *infectious*, seeing that in spite of its acknowledged drawbacks, it embraces all afflictions in which there is danger from proximity of the sick and healthy, and that it is not so restricted in meaning as to exclude the parasitic or the strictly inoculable diseases as might be the case with the other terms. I would seek in my general remarks to cover whatever diseases are transmissible from animal to animal, and thereby tend to diminish the numbers and impair the excellency of our flocks and herds, to reduce the wealth of the nation, or to undermine the health and vigor of the people.

Such a statement is a simple act of justice to ourselves, since with a large proportion of the community, our profession is regarded as exhausting its functions in the mere employment of drugs and blisters and in the performance of a limited number of surgical operations. How often is the recommendation to destroy a useless and dangerous animal met by the assertion that our business is to cure—not to kill.

That a statement of this kind is an act of justice to the governments and peoples is but too sadly apparent in the bitter experience of Great Britain, Holland and other countries that, in their hour of danger openly sneered at what they were pleased to call "the logic of the pole axe," and cast contempt on their accomplished veterinarians when they offered the only rational and economical system of prevention.

Estimates have been made of the hundreds of millions lost to Europe, at frequent intervals as the result of the diffusion of one or two animal plagues, but who will ever compute the aggregate losses endured in the depreciated but non fatal cases, in the loss of the prospective progeny of valuable races, in the imperfect harvests consequent on the different manuring, tillage and preservation of the crops owing to the inadequacy of the surviving stock, and in the deterioration of human health in connexion with the insufficient yield of the soil? And who will tell the destruction incident to parasitic and other affections, which, in times past failed to be recognized, and were therefore allowed to spread without let or hindrance? Even with educated men there is no proper knowledge nor appreciation of this subject. Usually they are stupid in the profoundest ignorance of the whole matter. Too often when an attempt is made to enlighten them, they repeat the act of the hunted and hopeless ostrich, and seek to ignore and stultify out of sight the peril of the existence of which their judgement is being convinced. Concluding that "when ignorance is bliss 'tis folly to be wise," they esteem it happier to risk the myriad surrounding dangers, than to render life miserable by a constant apprehension of lurking enemies, where they have been hitherto unsuspected.

Our task then is a thankless one, but are we thereby exonerated from the duty of uttering a solemn warning? Verily no. It has been the experience of all prophets and teachers since the world began, that they first met with deaf ears, and finally, if they

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persevered, with abuse and persecution. Yet those neglected, despised and abused personages have been the true benefactors of humanity, and almost every step in human progress has been heralded by their voluntary personal immolations.

Our case is all the harder, that those who are devoid of the not unnatural repugnance I have referred to, and on whom the work of restricting animal plagues is usually imposed in this country—the physicians—have rarely any just appreciation of the magnitude and importance of the subject. In a Bill introduced into Congress in 1872, and prepared by an eminent physician and sanitarian, the diseases of animals named, as specially demanding investigation and supervision are “cattle plague, rot in sheep, and cerebro-spinal meningitis in horses.” Now I might fairly ask why name for special investigation *Rinderpest*, which has never been seen on the American Continent? why *rot in sheep*, of the existence of which in America I can find no reliable proof? And why cerebro-spinal meningitis—an American malady truly, but one that is probably not at all communicable from animal to animal? But what of the long list of transmissible diseases which are already decimating the flocks and herds of this country? And what of the further list, which, prevailing in other lands, are liable at any time to be imported into our midst?

I find that there are from fifty to one hundred communicable affections prevalent among domestic animals, that demand more or less concerted efforts for their extinction or restriction. Let me enumerate some of these:—*among horses* we have glanders, farcy, malignant diseases of the genitals, horse-pox, strangles, influenza, the different forms of acariasis (mange) from *Sarcoptis equi*, *S. mutans*, *dermatodictis*, and *dermatophagus*, ringworm in its various forms,—*tricophyton*, *Achorion*, *Microsporon* and *Oidium*—*plutastomata* in the nasal chambers, *strougyli* in the lungs and lower air passages, the *oxyurida* and *sclerostomata* in the bowels, and in the case of the latter in the blood-vessels as well:—*Among Cattle* are cowpox, aphthous fever, rinderpest, lung fever, Texan fever, enzootic abortion, lung worms, *echinococcus*, *cysticercus*, *mediocanillata*, intestinal round and tape worms, especially such as live also in sheep, flukes, mange from *dermatodictis* and *dermatophagus*, and ring-worm in its different forms:—*in sheep* are sheep-pox, aphthous fever, rinderpest, foot-rot, flukes, *cysticercus*, lungworms, *coenurus cerebralis*, *tænia dentata*, intestinal round worms—mainly *strongylus contortus*, *S. filicollis*, *Ascaris ovis* and *tricocephalus affinis*,—*peutastomata* in the mesenteric glands, and the different forms of scab from the presence of the various acari:—*In Hogs* are swine-pox, intestinal fever, aphthous fever, lung worms, *echinorhynchus stephanurus*, *strongylus gigas*, *trichnia*, *tricocephalus crenatus*, *ascaris suis*, *echinococcus*, *cysticercus cellulosa* and *sarcopic mange*:—*In Dogs* are canine distemper, rabies, dog-pox, *tænia coenurus*, *T. echinococcus*, *T. marginata*, *peutastoma*, mange and ring-worm:—*In Chickens* are gape, dysentery, mange, ring-worm, &c.; finally, all are subject to malignant anthrax, malignant cholera and tuberculosis.

Such are the main but by no means the whole of the communicable diseases of the domestic animals. Is it not of the highest importance that the public, and especially the medical public, and the legislators should be apprised of these many unsuspected sources of national suffering and loss? The present absence of governmental protection against these diseases and their consequences, is only to be excused on the ground of the blank ignorance of our legislative assemblies. When a bill for the prevention of contagious diseases in animals was recently brought into the N. Y. Legislature, an honorable member, and I regret to say, a physician, affirmed most positively that there was no such thing as contagious pleuro-pneumonia, and by his vehemence and the credit

attachable to him as a member of the medical profession, he contributed to the defeat of the measure. New York accordingly still groans under her imported and indigenous diseases. It is a matter of frequent observation with me that glanderized horses are preserved for years, exposed in all sorts of public places and highways, kept in livery stables, sold or traded to unsuspecting persons, worked on thrashing machines which are travelled over the country, bringing them in daily contact with new and healthy studs, the stalls, mangers and buckets of which they share, to the deadly peril alike of the beasts and their masters. Intestinal fever of swine is frequently imported, proving fatal to whole herds and rendering the hog-pens untenable. Texan fever has recently devastated three separate localities in the centre of the state, and I believe I am correct in stating that the dairies of the metropolitan city herself, are still being ravaged by that insidious foe, of the mythical nature of which, our medical member of assembly felt so confident. Yet in the face of all this and much more our Executive is legally helpless.

Now the people must be instructed in these matters, and it is our duty in particular to lay the matter before them. We must not leave our physicians in a position to honestly plead ignorance when they have placed in jeopardy their reputations as men of science, and discredited their profession by denying pathological facts of the most notorious kind. We must place before them in the shortest and plainest terms the history of these diseases, and show what momentous questions in political economy are involved in their characteristic of communicability from animal to animal. We must show, in reference to the *lung fever* for example, that it was unwittingly described by Lancisi, Ranold, Ramazzini and others as prevailing extensively in Europe in connection with Rinderpest in the early part of the last century, having been propagated by the same cause, namely, contagion from the travelling commissariat parks of the armies in the field. We must show them how the immortal Haller testified to its dangerously contagious properties, as seen by him in the Jura mountains at that period. We must show how it invaded Ireland in 1839-40, and England in 1842, in the bodies of Dutch cattle, and has prevailed in these countries uninterruptedly since, ravaging especially those parts into which foreign cattle or those from the large fairs are brought, and avoiding localities, no matter how cold and exposed, into which strange cattle are never taken, but where the whole supply is by the natural increase of the native stock. We must show how it reached the Cape of Good Hope and Australia by imported cattle, destroying stock almost beyond computation, and how it is still proceeding on its career of destruction. We must tell how it was imported into New York in 1843 and 1850 by Dutch and English cows, and has since silently spread over nearly our whole eastern seaboard.

On the other hand we must illustrate how the exclusively breeding districts in even the most plague-ravaged states have escaped, just so far as they have avoided the purchase and introduction of strange stock, as exemplified in Great Britain before the Free Trade Act of 1842, and in many parts of the Scottish Highlands, the Cheviots, the Channel Islands, Spain, Portugal and Normandy, up to the present time. We must show further, how in certain states in which it had gained a footing—as in Sweden, Norway, Denmark, Schleswig, Oldenburg, Switzerland, Massachusetts, Connecticut and New Jersey—it was stamped out, and definitely excluded, by the destruction of the sick, and the adoption of thorough measures of segregation and disinfection. We must illustrate how Europe has lost thousands of millions from this disease, and how certain we too are to suffer in equal ratio, if we neglect the pestilence until it reaches our great Southern and Western stock ranges, the great source of supply for all our Eastern markets.

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Rinderpest though happily unknown on our Continent has cost Europe, Asia and Africa many thousands of millions of dollars. Recently in England alone it swept off stock of the value of \$40,000,000, in the short space of eighteen months. And what is there to protect us from a worse experience, while we are at liberty to import hides, hair, wool, and other products from all parts of the world, and while live stock are to be admitted on the certificate of an American Consul alleging that he believed them sound at the period of embarkation? Our Executive are manifestly ignorant of the fact that animals may be shipped in the finest health apparently, yet with the seeds of the most fatal contagious diseases within them, which germs will develop with the most destructive results at a later period. It seems the hardest of lessons to learn that a square plug will not stop a round hole, and that the most accomplished and truest of men will only blunder if we set them to decide questions in a science of the rudiments of which they are ignorant.

Similar to *Rinderpest* is *Sheep-Pox*. Often and disastrously has it prevailed in Asia and Europe, and that it has not sooner reached us may be attributed rather to a fortunate chapter of accidents, than to any sufficient precautions against its importation in sheep, hides, wool, catgut and other products.

The *Malignant disease of the genitals* is another of the exotic maladies of Asia and Europe, which may be imported at any time, and the advent of which is all the more likely that it may exist for a length of time in the system without any external manifestation, which would rouse the suspicion of the ordinary observer. In this respect it resembles lung fever, the germs of which may remain, for over two months, latent in the system, and the infected subject may meanwhile cross both the Atlantic and American Continent, and arrive in the remotest States, in the finest apparent health. It is these insidious diseases that above all demand a careful examination, and quarantine of imported animals; for the promptly fatal maladies, such as *Rinderpest*, *Sheep-pox*, porcine intestinal fever, Texas fever, malignant anthrax, malignant cholera, &c., rouse at once a panic in the community and insure some action in the premises. But lung fever crept unawares into the country and continues to lurk comparatively unnoticed among the herds of New York, New Jersey, Delaware, Pennsylvania, Maryland, Virginia and District of Columbia, but ready to burst out with deadly effect, so soon as it reaches our stock-raising regions and can spread with the busy currents of cattle traffic to the different states of the Union. So with the malignant disease of the genital organs; once introduced—and nothing is easier or more likely—and it would lurk unsuspected for weeks or months in the bodies of mares and stallions, steadily extending by the act of coition, and infecting whole regions with a fatal disorder, all the more dangerous that in its early stages it would escape general observation, though virulently infecting from the outset.

The *Exotic Aphthous fever*, though comparatively lacking in records of mortality, is scarcely less to be dreaded and guarded against. The loss of condition and milk from this disease, varying from \$5 to \$20 per head in cattle, is no small item when we take into account the extreme virulence of the contagion, and how rare it is for an exposed beast to escape. But to this must be added the occasionally permanent injury to the feet, to the udder, and to the womb and product of conception, which very materially enhances the loss. And we must further take into account that all cloven-footed animals are as susceptible as cattle and suffer in the same proportion, while other genera of animals and human beings even are obnoxious to the virus, and in case of the young fed on the warm milk, suffer often to a fatal extent.

If we turn to our indigenous animal contagion, we find the matter quite as bad. *Porcine intestinal fever*, the so-called hog cholera, has almost ruined the stock-owners in some of our best pork raising states. Within the last year complaints have come from all directions that hogs have been dying by hundreds, and nothing can be found to arrest the scourge. To show how extensive the losses have been, I may quote the conclusion of an eminent Iowa banker, a careful financier, and the least likely of all men to be astray in his figures, that in his county alone over \$100,000 had been lost by the disease in swine during the year. Others have estimated that one-fourth of the hog crops of the West has been cut off in this way within the year. If then to allow an ample margin, we take but one-eighth of the hogs reported in the last census from our main pork producing states, 3,000,000, and estimate these at \$5 per head, we reach a sum of \$15,000,000 loss in a single year from this pestilence alone.

Come to *Texas fever* and we are confronted by a very similar state of things. The losses from this affection have never been estimated to my knowledge. When they have become excessive as in 1868, a panic has ensued, which has led to a temporary exclusion of Gulf Coast cattle from the Northern States during the heat of the summer; but with an immunity of one or two years effacing the apprehension, and a further extension of railroads, permitting of the transit of the Southern cattle through the Middle states without unloading, and Texas cattle are again carried to our extreme northern boundaries during the hot seasons, from numerous centres of contagion and mortality, from which all the cattle must be carefully secluded until the approach of winter. The latest instances of this kind, in the extreme north that have come to my knowledge, consists in extensive losses in the City of Detroit, in central New York, and in Worcester, Mass., within a few weeks past.

We may flatter ourselves as we will of the sufficiency of local and State restrictions in checking the progress of this malady, but we will never place these restrictions on a permanently satisfactory and economical basis until we have them instituted, and carried out by the Central Government for the protection of the States at large. It is useless and worse to plead State rights as a barrier in a matter of this kind. No state has the right to make herself the highway for the transmission of a plague, which will devastate and ruin a neighboring commonwealth. It has been decided at the cannon's mouth that no such a right shall entitle any State or group of States to secede from the Union and no less imperative is it that no State rights shall be exercised to undermine and destroy our agricultural interests, the only solid and lasting foundation of all our varied industries and of our national wealth.

The importance of stringent legislation for the extinction of *glanders* and *farcy* will hardly be disputed by any one at all conversant with the subject. Though they are I believe, perceptibly less virulent in the drier climate of North America than in Great Britain, and though permanent recoveries are not so rare, yet the prospect of cure will never warrant treatment when the glandrous deposits are softened and discharging, and especially in view of the danger of the loathsome infection implicating other solipeds, other genera of animals, and above all the human being himself. And yet in New York, as I have already stated, I have been compelled to witness the subject of chronic glanders again and again, stalled in public stables, used on public highways, watered from public troughs, depositing the *materius morbi* on every object they touched with their muzzles, and snorting it out all around in their frequent endeavors to clear the nose and when the matter became too notorious I have had to look on helplessly, while the source of all the trouble has been conveyed away to new and unsuspecting communities

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to diffuse disease and death in their most loathsome forms to man and beast. Against this we have no legal protection—no means of putting a stop to such immoral, inhuman, homicidal practices. Redress is only to be sought and obtained after the injury has been sustained. Is such a state of things, worthy of an enlightened community, boasting of the universal education, and intelligence of its citizens, of its advanced positions in the arts and sciences, of its century of personal freedom, and the maintenance of human rights, of its large hearted philanthropy and its christian civilization?

Canine madness will be universally relegated to the same category. What if it should be found that a Hungarian plant is a specific in the majority of cases, what man in his senses would preserve even for a day a dog that is unquestionably mad, with even the remote probability of infecting man with this terrible disorder? The same consideration would demand the strictest supervision of all dogs, in all localities, and the general diffusion of information on the preliminary symptoms of rabies.

To be classed with these is *malignant anthrax* to which all domestic animals are liable, and which so frequently and fatally infects the human being himself. It is greatly to be desired that all malarious and unhealthy regions should be drained and rendered salubrious, but the wish is vain, in the present state of the nation. Nevertheless much may be done in the way of instructing stockowners how to avoid such places in the more dangerous seasons, when heat and dryness have induced decay to an unusual depth in the soil, when the blood of the animals is loaded with excess of organic matter, whether plastic or excrementitious, and when the excessive alterations of temperature in day and night, tend to disturb the balance of function, and lay the system open to disease. They must be instructed to avoid as far as possible all contact with the skins, blood, or other products of the victims of the malady, and to employ disinfectants after every inevitable contact. Above all should the places where the sick had been, the graves, &c. be thoroughly disinfected under professional supervision. Last year it was my experience to see in a single outbreak of *malignant anthrax* the communication of the disease to three men, in two of whom it would probably have proved fatal, but for the prompt and thorough treatment resorted to by the surgeon whom they consulted. Other isolated cases are continually occurring, and though we do not repeat the experience of Egypt in the time of Moses when boils and blains cut off man and beast, nor of the agriculturally undeveloped countries of Europe in the middle ages, when the human and brute populations alike were decimated by these diseases, nor that of St. Domingo where 1400 persons perished in six weeks, in the last century, nor even that of the flat swampy provinces of Russia, where the Siberian Boil Plague yearly claims its hecatombs of victims, yet we have our scores of human victims yearly, and we have the poison preserved in grass pastures, yards and buildings to break out with destructive effects at some future period.

Yearly we suffer untold losses in various states from *enzootic abortion in cows*. Herds and whole counties almost are rendered comparatively useless or unremunerative, and this continues from year to year, until the malady has manifestly exhausted itself, after which the formerly affected animals are spared, but there is no extinction of the disease, which meanwhile shows itself in all newly purchased or young animals that have not already suffered. It will be retorted that our science has no provision for the extinction of this disease. It is true that no investigation has been successful in laying bare the secret of the malady, and nearly all theories, whether of ergotism, early breeding, excessive milking, exhaustion of the soil, urinary disorder, &c. have been in turn disproved for the inexorable logic of facts, yet the need is all the greater, that a thorough

investigation conducted by competent scientific men, with ample means at their disposal for experimental research, should be instituted by the General Government, by a State or by a Dairyman's Convention. No such investigation has to my knowledge been placed in the hands of Veterinarians, and no committee of any kind has been empowered to resort to experiment.

There is a wide spread feeling that such investigation is the duty of the State Agricultural Colleges through their Veterinary Clinics, but this argues a most imperfect apprehension of the subject. All such colleges are already suffering from want of means to carry on their course of instruction, and not one has the money to spare for the purchases and maintenances of experimental animals and stables, under the careful supervision necessary for scientific accuracy. Stockowners may as well be told that there is no royal road to scientific discovery, but that the ascertaining of facts experimentally under conditions carefully adjusted to exclude all conceivable sources of fallacy, is the one mode which is in keeping with the demands of modern science. It is the one too which promises the best results, at the smallest pecuniary outlay, however expensive the preliminary outlay may appear. Without this, there is too much of the *post hoc, ergo propter hoc* in our supposed discoveries, and we will be constantly reminded that they are but partial truths after all, as subsequent occurrences in different attending conditions, will continue to invalidate their supposed primary significance. Such an investigation to be at once economical and full of promise, should be conducted by those who are alike intimately acquainted with scientific methods, and with the present state of veterinary pathology; as they must otherwise be much less prompt and certain in their results and liable to far more unexpected drawbacks, and fallacious conclusions. While it must be confessed that many valuable discoveries have been made by accident or intuition, the experimental mode alone is scientific, and will place the results on a solid and enduring foundation. Let then the necessary means be provided and veterinarians will not be wanting in the will, nor devotion necessary to conduct the investigation.

Contagious Foot-rot in Sheep may be placed in the same category with abortion. In some States the destruction caused by this disease has become enormous. A few years ago it was so prevalent in Iowa that sheep became almost worthless, and many flock-masters were ready to part with their property on almost any terms. Those flocks only escaped which were secluded in the home pastures and kept off the ground on which the diseased had been. Even now, after the lapse of six years from the definite extinction of the malady, its influence is seriously felt in the great diminution of flocks within the area of former infection. Such an affection is a legitimate subject of legislative control, though from the comparatively fixed nature of its contagion it only spreads under given and easily avoidable conditions.

Tuberculosis must now be accepted as a communicable disease, conveyable by inoculation or the ingestion of the tubercle. I will not try your patience by recounting the proofs of this, but taking these for granted, will merely indicate the extreme danger to our most valuable herds from the introduction of a tuberculous animal—and many of our most highly prized races are already infected—and the further danger to man from eating the underdone meat or even drinking the warm milk of some of these cows. The momentous interest involved in this question are almost incalculable. The conceivable destruction of infancy and wasting of manhood, may well demand a prompt and crucial investigation, and unless the transmission of the disease by the channels just mentioned is negatived the further adoption of the most stringent measures for the restriction of the malady, and the preservation of the community is imperative.

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Even in regard to *Strangles* and *Influenta* readily diffusible as they are, there may arise conditions, and which from the limited area of their prevalence, or the favorable circumstances for imposing a barrier, we will be justified in repeating the experience of Vancouver's Island, Prince Edward's Island, La Paz, Key West, and all the West Indies except Cuba, and extinguish or exclude the poison to the incalculable benefit of the Country.

But in conclusion I must briefly refer to a class of communicable diseases which have received too little attention at the hands of sanitarians. I allude to the *parasitic affections*.

No one disputes the need of legislative action in reference to the different forms of acariasis (mange) in the domestic animals. I may therefore pass these over without further remark. Of *ringworm* something might be said, but considering its general amenability to treatment I will dismiss this subject also.

But when we come to the *entozoa* we find a strange absence of even the advocacy of preventive measures. In some large cities it is true the pork is inspected for *trichinia* and *cysticercus* (measles.) But why in the name of common sense should we continue to lop off the terminal twigs, of this upas, and not bethink ourselves to strike at the root? Nothing would be easier, in the majority of cases, than to trace the trichinous pig to its pen, to slaughter and microscopically test all that have been kept in the same locality, to thoroughly destroy the germs even by the incineration of the wood work if necessary, and to secure and burn up all the rats and mice and if found infested all cats and dogs in the vicinity. Nor would it be more difficult to follow up the *measly hog*, to find what human beings he had been reciprocating in an exchange of guests, to expel and destroy all the tapeworms from man, and to remove all hog-pens far from infested localities.

What is to hinder our adopting similar measures, looking toward the extinction of the *lung worms* of horses, cattle, sheep, swine and poultry, of the deadly *sclerostomata* of the horse, of the *tapeworms of cattle and sheep*, of the *strongylus filicolis*, *S. Contortus*, *tricocephalus affinis*, *ascaris ovis*, and other destructive intestinal round worms of the sheep, of the *tania canurus*, *T. echinococcus*, *T. marginata* and other less hurtful tapeworms of the dog, of the *cysticercus medicanellata* of the ox, of the *stephanurus dentata*, the *ascaris suis*, the *tricocephalus crenatus*, the giant *echinorhynchus*, and other entozoa of the hog, and the *distomum lanceolatum* and *fasciola hepatica* of the domestic animals generally when placed upon wet pastures. Each of these is capable of producing an enzootic or even an epizootic, when the animals that reciprocate with each other in sustaining the parasite at its different stages abound in the same neighborhood, or when a sufficiency of suitable animal hosts and an environment of soil, vegetation and water favor their development and increase.

We all know how in wet seasons the *liver rot* has destroyed hundreds of millions of sheep in Europe, how it has repeatedly laid England under a contribution of 3,000,000 head and upward in a single year, and how it has recently devastated the plains of Victoria, when the parasites were introduced in the bodies of German rams. We know how England is now almost infested throughout with the lung worms in cattle and sheep, and what ruinous loss of condition and life occur yearly to the young animals from this cause, and I may add that in several of our Western States devoted to the raising of sheep the condition of things is not much better. Last winter in a lecture before the N. Y. State Agricultural Society, I predicted that unless some protective measures were taken, our sheep runs would soon be in the same condition as in

England in regard to these worms. Within a week thereafter I had information from different counties of Illinois and Iowa of the almost universal prevalence of the parasites in question, and of the consequent frightful mortality in lambs. One Iowa flockmaster wrote me that his county contained 100,000 head fewer sheep than it had done seven years before, though nobody had suspected the true cause of the mortality until my remarks came under his notice. By way of corroboration I was sent many fine specimens of the small lung strongyles of sheep. I have not yet seen the lung species in America. Here in a single County we have a loss of sheep to the value of not less than \$300,000 in place of the natural yearly increase to double their numbers. Will this not abundantly justify the expense of prophylactic measures?

Recently I saw in a prominent agricultural paper an advice tendered to a farmer to improve the feed of his anaemic sheep and give tonics. To test the true cause of the bloodlessness, I dropped a line to the farmer in question, and by return mail I received large bundles of the *tænia dentata* which he had found in the bowels of a single lamb. With us as with the Australians and Germans enormous losses are yearly sustained from the prevalence of these intestinal tapeworms, as well as from round worms in the bowels of sheep. The success or insuccess of sheep husbandry is often determined by the absence or presence of these parasites, and their neglect bids fair to lead to the abandonment of many of the best wool-growing districts, either to nature or to less remunerative culture.

In Swine I have known *Intestinal worms* to induce fatal palpitations, diarrhoeas, and enteritis, and *lung worms* to prove as injurious as in calves, so that in this whole class of verminous diseases there is ample scope for restrictive measures and abundant promises of good results.

I have called this the true work of the Veterinarians. I have said that no one can accomplish it so promptly, so cheaply and so well as the accomplished veterinary pathologist. Even as private practitioners we can do much in giving to the stockowner advice which will enable him to obviate much of the danger. This we will do if we would be true to ourselves, our profession and humanity. But in fulfilling this duty, we must never forget the greater possibilities, the incomparably more beneficial, because more thorough, fundamental and lasting good which may be accomplished by a wise and vigorous action of the Government, for the restriction and extinction of animal plagues. Let us not shrink then from our duty in this respect also. Let us sound the note of warning, let us tell the nation of the evils that beset it, that are ever increasing and closing around it, and even if our voice remains unheeded if pestilence and destruction are allowed to overrun the land and to undo our prospects of a permanent high, national prosperity, we will at least have the consolation of an approving conscience, and will in the end be duly credited with having advocated a system which is at once sound, economical and beneficent.

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STIMULANTS IN DISEASE.

When I accepted the proffered honor of reading an article before this meeting of the association as representative from the State of New Jersey, I was hardly aware of the injustice I was doing the other members of the profession, and can only warn you not to judge of the advancement of Veterinary Medical Science in my adopted State, by the deficient knowledge of her representative here to-day. Being but a recent graduate upon whose Diploma the ink is hardly yet dry, and whose experience must consequently be very limited, you will not expect from me an article, fraught with the knowledge and experience of men who have practiced for years, and who have or will read to you during this meeting. I highly appreciated the privilege my nomination granted me, for I had no hope of reading before this association in 1976, and I was only too anxious to accept a position which common sense told me was higher than I could, with any credit to myself, my profession or my State, fill.

I assure you now that I shall not attempt to tell you anything new, or anything you do not already know, but shall simply reiterate the results of other people's research into the action of "*Stimulants in Disease*."

The field of knowledge covered by this subject is so great that I did not know where to commence, and finally got lost in trying to comprehend only a small portion of it.

As works upon the action of Veterinary Medicines are so limited in the English language, and experience has taught me so little, I have looked for most of my information in the works upon Human Medicines. The medicines which I shall speak of in particular are *special stimulants*, Digitalis, Belladonna and Strychnia; while I shall speak to a limited extent upon Alcohol and Ammonia as typical "*General Stimulants*."

A few years ago stimulants were almost unknown in the treatment of diseases, and more especially in the treatment of *fevers*. When it was fashionable, and no doubt necessary for every practitioner to carry a lance in his vest pocket; when every patient must be bled and physicked without any regard to the nature of his malady; when Mercury, Opium or Tartar Emetic were sheet-anchors in the treatment of almost every ailment; probably more stimulants were used at an association meeting or big dinner than in combating disease.

Of course the knowledge the profession had at that time of the pathology of many diseases, notably the *fevers*, was very meagre as compared with the pathological knowledge of these diseases, as obtained from time to time, and in possession of the profession at the present time.

It is not to be expected that a disease will be treated upon any scientific principle when its nature is an entire mystery. Neither is it to be expected that a just appreciation of the use of drugs can be entertained by men who do not know their action nor the indications for their use.

We sometimes feel inclined to smile when we remember that only a few years ago the lance would have been the first resort in treating a case which to-day we stimulate

from the very inception of the disease; yet had we lived at that time, or had science failed to make any advancement, we undoubtedly would do just as they did, while it is *more than possible* that future generations will look with the *same compassion* upon our very deficient knowledge of the action of medicine, as *we* entertain for those who have gone before us.

Many of the old landmarks in the treatment of disease, are, if not rapidly, surely passing away. Among those now numbered with the things of the past preeminently stands bleeding. Many of the members present no doubt well remember when they bled the patient that was plethoric, and the one that was anaemic; whether there was a full hard pulse, or a soft and weak one, whether he had a disease which would render him unable to stand from debility, or whether it was a disease that would never cause death, it mattered not—the indications as then considered were for bleeding and the operation was accordingly performed. That such indiscriminate use of the lance must necessarily do very much harm, and as a common remedial agent lose its wonted popularity, is fully attested by the prejudice existing in the mind of the public against the use of this once much abused remedy. I think each year finds us giving to stimulants a higher and still higher position upon the roll of medicine used in Veterinary practice. In those diseases for which we have no specific, and that cannot be cut short by remedy, but must run a regular course; those diseases which tend to destroy life by wearing out the strength of the patient before nature has carried him beyond the point of danger, stimulants are now come to be used and recognized as of the utmost importance in assisting nature to support the failing strength until the critical period is safely passed.

More attention too, is nowadays paid to the clinical history of a disease as an indication for treatment than in days gone by. If as in Epizootic Influenza, we know that the first symptoms of a violent inflammation are to be followed in a few hours by the greatest debility, we are warned not to reduce the patient's strength by depletive measures, but to guard against the consequent loss of strength by agents which seem to be contra-indicated at this period of the disease—agents which will place the patient in the very best possible condition to withstand the depressing influence of the poison already in the system and about to show itself by the great reduction of vital force through its action upon the nervous system.

A great mistake in the past has been that the resort to the use of stimulants was deferred until nature was so completely exhausted as to be beyond the reach of their influence, instead of anticipating as we now do the ravages which the disease would otherwise make, and by an *early* administration of stimulants *prevent* that condition of the system so dangerous to the ultimate recovery of the patient, thereby carrying through to a happy convalescence very many cases, which under the old method of sedative treatment would succumb to the influence exerted by the disease.

I notice by a reference to English authorities that our trans-Atlantic cousins do not believe in the use of stimulants to the same extent as we Americans do. At the same time I have observed that country practitioners here do not so strongly advocate the use of these medicines as do those who practice in cities.

It is no doubt true that pampered city horses do not bear disease so well as those subjected to a rugged country life and fare. Although the percentage of the different diseases to which the equine species are subject varies between the city and country, still I believe stimulants could be used by the country-practitioners with results more satisfactory than those now obtained from the use of sedatives in several of the diseases which they are called upon to treat.

In the time of that most eloquent of veterinary writers, Percivall, a man's sanity would no doubt have been gravely questioned had he recommended the use of stimulants in such a disease as Pneumonia. In his Hippo-pathology in speaking of the treatment of this disease he says, it may be necessary to bleed once, twice or three times within eighteen hours. He considered blood-letting imperative, and that too "without any regard whatever as to the state of the pulse or condition of the patient."

Truly Pneumonia must have been considered a very formidable disease at that time if no possible condition of the system could render immunity from bleeding. Considering that Pneumonia tends to recovery, I do not think we are wide of the mark when we say that the treatment then adopted, greatly increased the mortality in this disease, while had its pathology been clearly understood and its clinical history observed, the fallacy of their theory for its successful treatment would have been detected and remedied long before it was.

As it was in this disease, so it was in many others, until step by step the belief that a disease must be treated in conformity with certain prescribed rules, without any regard to the modifications indicated by the condition of the patient, died away; and comprehending more fully the conditions we have to deal with, we treat our diseases to-day with less prejudice, and with more regard for the scientific principles established by a better knowledge of the ailments to which the domestic animals are subject, and an increased understanding of the action of many medicines, especially *Stimulants*. Ringer in speaking of stimulants says "they are most serviceable in the prostration from acute illness, when in common with the other functions, *digestion* is much depressed, at a time when it is most important to support the strength until the disease has done its worst. Strength no doubt is best supported by food, yet the weakened stomach can digest but sparingly. At this critical stage Alcohol well spurs the flagging digestion, and enables the patient to take and assimilate more food." To get the best results from the use of Alcohol, the doses should not be large, and more often repeated.

If a large dose is given the heart is strongly stimulated, and when the Alcohol is decomposed or eliminated the heart is left unsupported, when great weakness may set in; whereas smaller and oft' repeated doses keep the heart more uniformly supported. In man if the use of alcohol is too long continued it induces catarrh of the stomach, a condition no doubt to be expected in our patients from the abuse of this medicine. One author states that he has often successfully used alcohol to control the after stages of acute simple diarrhoea. It acts by giving tone to the relaxed mucous membrane which is allowing the liquid parts of the blood to pass into the intestines causing those frequent watery dejections. Alcohol taken internally reduces the animal temperature. Dr. Rickards finds that after moderate doses have been given the temperature will fall from four-tenths to six-tenths of a degree F. In poisonous doses the reduction is very much greater, reaching in man as much as three degrees Fahrenheit, while in rabbits a fall of ten degrees has been noted. Alcohol diminishes the oxidation of the tissues of the body, according to the testimony of such eminent authority as Drs. Harley, Bocker, Hammond, Smith, and others. "It strengthens the contractions of the heart, especially when this organ is weakened by debilitating diseases, which are always attended by a quickened and weakened pulse."

It is one of the most powerful cardiac tonics we have in disease, and this tonic property combined with its influence in promoting digestion, explains its great usefulness in many diseases. In those acute diseases which run a definite and limited course,

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accompañado by weakness or prostration, alcohol is of conspicuous service in sustaining the vital force beyond the critical stage. Dr. Armstrong, in speaking of the use of stimulants in fevers, says, "If they *increase* the pulsations of the heart—the respirations—or make the skin hot and parched, they should be discontinued." In using stimulants, and especially alcohol, it will often be noticed that a large, soft and weak pulse will grow smaller and less compressible, showing that the heart is strengthened by their use and the tenacity of the arteries increased.

In England Dr. Anstie is a strong advocate for the use of stimulants in fevers. He gives alcohol to reduce the temperature and check waste as well as to strengthen the heart's action, reduce the frequency of its beating, and increase the digestive powers. Alcohol has been recommended by our profession in the treatment of tetanus; and I am constrained to say, from my limited experience in its use, as well as from the more important testimony of others, that it is of signal service in this dreaded malady.

If experience has taught us anything in connection with the treatment of this disease it is, that all the sedatives and antispasmodics known to the *Materia Medica* are inadequate to break the tonic spasms to which the voluntary muscles of the body are subject. If, then, we cannot overcome this morbid hyperesthesia of the nervous system with the drugs, seemingly indicated by the symptoms of the disease, let us support the digestive and circulatory powers of the animal economy, until nature accomplishes what science has as yet failed to find a remedy for. In those cases which seem to do well for a week or ten days and then suddenly die—cases in which, if you will make a post mortem examination, there will be found evidences of debility from exhaustion—stimulants, and especially alcohol, will, in many cases, I believe, tide them safely over the critical period and succeed in establishing convalescence.

The only case of tetanus that ever recovered for me—and it was one of the most unfavorable that I ever had—was treated with two-ounce doses of alcohol every six hours.

The dose was small, and the periods of exhibition probably farther apart than they should have been, yet the animal did well and made a good recovery. Trismus was well marked for six weeks, part of the time the jaws only opening one inch. The appetite was retained during the entire time, and digestion apparently as good as in health, for the animal took on considerable flesh during the time of her illness. The temperature averaged about 101 degrees F., rising to 105 $\frac{1}{4}$ degrees F. at one time, from the fact that she got down and could not regain her feet. It may be that this was one of those cases that recovered in spite of treatment; but when I consider the uniformity of temperature and action of the heart, as well as the very desirable retention of the appetite and digestion, I am forced to believe the alcohol had a marked beneficial effect upon the disease, and that the remedy is well worthy a further trial. The fact has been long recognized that the first step in the treatment of tetanus is to secure entire quietude; and if to this we can add a remedy, so easily administered as alcohol, that will sustain the important functions of the body until the nervous forces regain their wonted equilibrium, we will have succeeded in establishing a method of treatment simple in the extreme, and attended with results more to be desired than the past can claim for any treatment hitherto adopted. One thing is certainly evident to us all, and that is, alcohol does not depress the vital forces as sedatives do, while, if it makes a horse as limber as it does some men, we might have a decided antispasmodic effect from its free use.

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Veterinarians as the carbonate of ammonia. As a general diffusible stimulant it seems better adapted to veterinary practice than the other drugs in this class of medicines.

When I used to treat pneumonia with sedatives *every* patient died; since I have learned to use stimulants I have not lost a single case except where there were complications that resulted fatally. So far as my experience goes I find that the cases do better as a rule if placed upon carbonate of ammonia from the commencement of the disease. As instructed at College I have tried belladonna, in conjunction with the carbonate of ammonia, in the first stage with very satisfactory results. When in this disease the pulse becomes soft and weak and the temperature high, carbonate of ammonia strengthens the heart's action and reduces the amount of fever present. It is at this period that alcohol is of signal service in reducing the temperature, giving strength to the weakened heart and supporting the flagging digestion. But in those cases where there is imminent danger from the elevation of temperature, these medicines are not to be compared with the quick and efficient action of Quinine. I have seen the temperature reduced almost three degrees in twelve hour's time from the exhibition of a two dram's dose of Quinine. I have used Carbonate of Ammonia and Belladonna with marked success in a case of Cerebro-spinal Meningitis, and I can see no objection to its more general use in this disease. It will support the general strength of the patient and assist the Belladonna in keeping up the usual vigor of the circulatory system. I gave it in the case above mentioned for several days in gruel, per rectum, and with apparent good results, the only objectionable feature being a slight catarrh of the rectum induced by the irritating effects of the Ammonia, but this subsided of itself in a few days after the administration of the medicine in this way was discontinued. The only nourishment and medicine the animal took for five or six days was given in the form of enemas, and the ultimate recovery of the patient attests the benefit to be derived from this method of supporting the system during the period of inability to perform deglutition.

As an experiment I treated five cases of sub-acute Laryngitis with Belladonna and Carbonate of Ammonia and had just as complete and early recovery as in those cases where the ammonia was not used. The advantage which I at the time thought was obtained from its use, was the retention of the appetite to a marked degree and a more rapid convalescence. In the treatment of Influenza, no medicine works so well as the Carbonate of Ammonia. As a rule I do not think we can commence its use too early in this disease. Knowing as we do the clinical history of the affection, we aim to prevent the early debility which always occurs, by a vigorous administration of general stimulants from the very onset of the complaint.

Even in those cases where you will find with the first symptoms of the disease a strong full pulse and membranes highly injected—those cases I was taught positively contra-indicated the use of stimulants—they prevent to a great extent the debility which would otherwise follow.

In the summer of 1874, I treated thirty-three cases of Epizootic Pleura Pneumonia with Carbonate of Ammonia and Camphor, and of these thirty-three only five died, certainly as low a percentage of mortality as could be expected in this disease.

I do not mean to say that this treatment was more successful than any other would have been, but that the results were so favorable as to justify the belief that any other treatment would have been attended by at least as great a mortality.

In some of those diseases where we use stimulants extensively, English Veterinarians strenuously oppose their employment.

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Prof. Williams in his Principles and Practice of Veterinary Medicine, while speaking of the treatment of Pneumonia says "convinced of the inutility and danger of venesection many veterinarians, undoubtedly influenced by the teachings of Dr. Todd, fell into the other extreme, and treated pneumonia by large and repeated doses of stimulants. What possible good effect this kind of treatment has upon an ordinary case of pneumonia is beyond my comprehension; it can only add to the irritation of the inflamed part and increase the amount of exudation if pursued in the earlier stages." He further says: "In the later stages, during the deliquescent and absorption of the exudate, if the pulse be small, or in any degree presenting the double or dirotontous character, when the system is depressed by the obnoxious effects of large quantities of effete materials in the blood, moderate doses of stimulants are both necessary and beneficial. The practitioner should, however, wait until the consolidative stage has to some extent disappeared and secondary crepitations established." It is beyond my comprehension how stimulants irritate the inflamed part in pneumonia. The one we commonly use—the carbonate of ammonia—does not come in direct contact with the inflamed tissues, but first enters the blood, where it strengthens the action of the heart, reduces the animal temperature, and increasing the alkalinity of this fluid tends to fibrinize it, thus preventing in a measure the fibrinous exudation which we have in this disease. Professor Williams does not believe in using stimulants during the period of danger. In the second stage, when the heart's action is rapid and weak from over-exertion and the lungs filling with exudate, requiring the concentrated action of the heart's forces to drive the blood through them, he believes in giving aconite. It is true aconite reduces the number of pulsations of the heart, yet it *always* diminishes its strength, and, to my mind, seems contra-indicated, especially in the second or third stages.

That aconite is beneficial in the first stage I do not deny; but as we do not usually see our patients until this stage is past, and with it the indications for sedatives, I believe our English practitioners would find more success in the treatment of pneumonia did they not so vigorously object to the use of stimulants.

That digitalis is a stimulant is not admitted by all practitioners, yet we are assured, upon good authority, that the heart's contractions are strengthened by its use, and may be finally tetanized by its *excessive* use. "The heart of a frog, immersed in a solution of digitalis (1 grain to 8 oz. of water), will beat for two hours and a half, the pulsations becoming longer as they become fewer." When administered to man in disease it increases the contractile power of the heart and restores its regular performance. Messrs. Bouley and Reynal, in giving large doses to horses, found the circulation became more rapid, the heart-beats more abrupt, their energy much increased and accompanied, after a certain time, with a vibratory thrill, with a decided metallic tinkling; and as poisoning went on a distinct bellows' murmur was heard, becoming more audible on exertion; the heart-beats then show a decided intermittence and the pulse is small, thready, and intermittent. Dr. Brunton considers the blowing murmur as probably due to mitral or tricuspid regurgitation due to irregular contraction of the columnae carnae.

Dr. Fothergill finds that digitalis administered to an animal, whose heart has just stopped beating from poisoning by aconite, causes the contractions to again take place and the heart in time regains its normal heat, the digitalis thus acting as an antidote to aconite poisoning.

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But in poisoning from digitalis the contraction of the heart is so rigid that aconite has not the power to relax the tetanic spasm and again dilate the cavities. Ringer claims that, after a *large* dose of digitalis has been given, the pulse sometimes becomes very frequent and feeble while the heart is beating strongly, the weak pulse being due to dilatation of the arterioles whereby the blood passes readily and quickly into the veins. Traube holds that digitalis, in medicinal doses, stimulates the vagi nerves and thus slows the action of the heart, while poisonous doses paralyze these nerves, and the heart then beats rapidly and irregularly from want of nervous control. If this be true, digitalis is contra-indicated in aortic regurgitation, where a slowing of the action of the heart allows the blood to regurgitate into the ventricles; while, on the other hand, it will be of signal service in those cases of obstruction from disease of the mitral valves where its stimulating effects upon the vagi nerves, with its consequent slowing of the pulsations, allows more time for the distended auricle to empty itself before the final contraction of this cavity. Ringer notes a case of dropsy where digitalis was administered in which the discharge of urine per day was increased to sixteen times the previous amount and the dropsy was entirely removed. But he holds that where there is no dropsy in a case of heart disease, digitalis will not act as a diuretic; yet he considers it a diuretic acting directly upon the kidneys. Are we to infer from this, then, that diuretics have no action upon the kidneys in disease of the heart without dropsy? If digitalis will not stimulate the secretion of urine except in the cases he mentions—those accompanied with dropsy—it must be an indirect diuretic unless the heart disease prevents a direct diuretic action. In that functional derangement palpitation of the heart, or what some have been pleased to call "spasm of the diaphragm," the pulse is very weak, while the action of the heart is strong and tumultuous—in some instances striking the side of the chest with such force that the concussion can be heard at a distance of several yards. In these cases, generally due to over-exertion, especially on hot, sultry days, digitalis, administered in small and oft-repeated doses, will soon reduce the action of the heart to its normal condition. Gamgee records cases where it required eight days for complete recovery to take place. I have never seen a case that did not recover entirely in twenty-four hours' time. It may be that the palpitation in the cases mentioned by Prof. Gamgee was due to some organic disease of the heart; for if it was simply due to an exhaustion of the influence exercised by the vagi nerves upon the heart, it would certainly yield to treatment in much less time than he mentions. I remember a case where the heart was so tumultuous in its action that the whole body was shaken at every pulsation, and yet it recovered in two and a half hours from the administration of ounce doses of ether repeated every half hour. Digitalis is highly recommended in those cases of pneumonia where there is danger of death from heart clot. The digitalis, by strengthening the heart's action, prevents the commencement of the fatal heart clot.

I used digitalis, carbonate of ammonia, and opium combined in a case of obstinate diarrhoea accompanying pneumonia, but without success. The pneumonia did well but the diarrhoea would not yield to treatment, and the patient died of asthenia. Dr. Brinton highly recommends digitalis in haemoptysis, and says that hemorrhage will cease so soon as the frequency of the pulse is reduced. I have never seen it tried; but if digitalis strengthens the action of the heart and relaxes the arterioles, why is it the bleeding is not increased instead of diminished?

The sensation of hunger is increased by the administration of bitter tonics, but we have no evidence that strychnia increases the power of digestion in a healthy person.

Savory has shown that strychnia is much more poisonous when injected into the rectum than when swallowed. Harley's experiments prove that this powerful remedy acts upon all parts of the spinal cord, dilating the vessels, thereby increasing the supply of blood to the cord, while at the same time it augments its functional activity. Strychnia does not merely heighten the reflex action of the cord but it so affects it that impressions are not confined within their natural limits, but diffuse themselves throughout the whole cord.

It is from this property of increasing the supply of blood to the cord that strychnia is administered in those cases where paraplegia depends on softening and wasting of the cord, further destruction of the degenerated tissues being prevented by dilating the vessels and increasing the supply of blood to the parts.

It exhibits its action sooner upon paralyzed than unparalyzed muscles. In medicinal doses it strengthens the action of the heart. Harley says strychnia lessens the absorption of oxygen and the production of carbonic acid, or in other words, the respiratory function of the blood is lessened. Animals suffering from habitual flatulence are relieved by the use of nux vomica or its alkaloid. According to Dr. Anstie strychnia increases the capillary circulation. It is upon this ground that its use was recommended by our profession in the treatment of Purpura Haemorrhagica.

But as the extravasations in this disease are due principally to an alteration in the character and composition of the blood, I imagine it would be more in keeping with science should we treat the cause of the trouble than to treat one of the results. Still, if the administration of strychnia will prevent these extravasations from taking place by its action upon the capillaries, it will form a valuable adjunct to the direct treatment of the blood. Strychnia is of marked benefit in many cases of incontinence of urine. I remember treating a mare that had aborted a six months' foal, and was suffering from paralysis of the neck of the bladder, with small doses of strychnia, and effected a cure in a few days' time.

We probably use strychnia more in the treatment of meningitis than in all the other diseases combined. That it is of great value in the later stages of this disease can be attested by almost any veterinarian who has had this formidable disease to deal with. I have seen it used from the very outset of spinal meningitis with good results; yet if our knowledge of the pathology of the disease is correct it would hardly seem indicated in the early stage. If the amount of blood sent to the spinal cord in meningitis is in excess of the normal quantity, the administration of strychnia, which increases capillary circulation, would be expected to aggravate the symptoms, yet such is not the fact. One of two things then seems evident to my mind, and that is that strychnia either does not increase the capillary circulation in the meninges of the cord, or else the stimulating effects it has upon the functional activity of the cord, independent of that produced by an increased supply of blood over-balances the interference of function dependent upon an *excessive* supply of blood to the parts. I have used it early in a case of Cerebro-spinal Meningitis in conjunction with carbonate of ammonia with satisfactory results. I have tested its influence upon the same disease by alternating every two days with extract of belladonna and carbonate of ammonia, and found the patient did as well apparently under the exhibition of the one as of the other. If there was any difference in the symptoms noted, it was that while the animal was under the influence of strychnia, the temperature was from one-half to one degree higher than during the time of giving the belladonna. Now, it seems to me if belladonna and strychnia are diametrically opposed in their action upon the capillaries of the

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meninges of the cord there should be a greater difference in the symptoms when used as above stated. True experimenting upon a single case proves nothing, yet it is testimony tending to disprove the correctness of our theory for the treatment of this disease.

In a case of cerebro-spinal meningitis where there was complete loss of deglutition and inability to rise, I gave the animal two grain doses of strychnia repeated every four hours until the least noise would cause involuntary contractions of the voluntary muscles, at which time the dose was diminished and from that hour I marked a rapid and finally complete recovery. Just so soon as the twitchings of the muscles commenced, the power of swallowing returned, of course very imperfectly at first but with rapid improvement, so that in three days time food was quite readily taken and water was with some difficulty swallowed.

In some cases of chronic paraplegia seen in country practice and called by Prof. Williams "Azoturia" strychnia seems to do but little good and a complete recovery is best attained by turning to pasture for two or three months. In other cases it acts well producing a rapid recovery. In the earlier stages of this disease belladonna is an important remedy. Belladonna is very extensively used both externally and internally by all medical men. As an external application its effects are most readily seen and appreciated in the swollen udder of cows where suppuration is threatened. It not only reduces the swelling and pain consequent upon the inflammation, but at the same time diminishes and finally completely suppresses the secretion of milk. If applied early it will entirely prevent suppuration, and even in those cases where suppuration is inevitable the extent of the suppuration will be greatly limited by its use. Where there are constitutional symptoms accompanying the local trouble belladonna should also be used internally. The secretion of sweat, saliva and mucus is also greatly reduced by the use of belladonna.

Troussseau recommends the use of belladonna in obstinate constipation, it being claimed that it increases the peristaltic action of the intestines. Foster said if it is administered in conjunction with iron, the constipating effects of the latter drug, are prevented. Dr. Frazer was the first to discover that atropia excites the spinal cord and heightens reflex action, although this action is not displayed, from the motor nerves being paralyzed by its use. Dr. Harley considers belladonna a powerful heart tonic because of its power to reduce the frequency and strengthen the beats of the heart when weakened by disease. He also claims that a small dose *contracts* the *arteries*, while a large one dilates them. The contraction being due to stimulation, and the dilatation to exhaustion of the sympathetic nervous system resulting from its previous over-stimulation. Dr. Brown Sevard maintains that belladonna exerts a powerful influence upon the unstriped muscular fibres of the body, instancing the power of the drug to produce dilatation of the pupil of the eye, contraction of the blood-vessels of the *thamnae*, thus arresting the secretion of milk, contraction of the muscular fibres of the bowels and sphincter of the bladder.

I have lately seen atropia and morphia, one sixtieth of a grain of the former to one twenty-fourth of a grain of the latter, administered hippodermically to a man suffering from bronchial asthma, give almost immediate relief. If the disease we call heaves or emphysema is at first dependent upon the same nervous derangement, as held by Prof. Williams, the action of these two drugs should be tried upon our patients. If the small bronchial tubes are in a state of spasmodic contraction, and belladonna had the power of paralyzing the terminations of the vagi nerves it must necessarily give relief. Belladonna has been recommended to abort threatened attacks of bronchitis and other

inflammatory diseases of the air passages. That it has a marked influence upon these diseases when administered early there is no doubt. In the treatment of Laryngitis it might with justice be called a specific. Years ago when this disease was treated by the usual depletive measures the mortality was considerable, while to-day a case seldom dies. Its use greatly relieves the congestion and irritation of the inflamed parts and prevents to an extent the distressing cough accompanying this disease; it reduces the amount of the discharge which usually takes place and tends to prevent the formation of abscess in the intermaxillary space. Its local application when the glands are swollen and painful will give relief. The use of Belladonna in the treatment of Cerebro-spinal Meningitis was first recommended by Prof. Large of Brooklyn. He has the honor of having been the first author to name and give a comprehensive account of the pathology and treatment of this disease, notwithstanding the assertion in Williams' Principles and Practice of Veterinary Medicine published in 1875, "that no veterinary writer has as yet given to it the attention, which, considering its increasing frequency it demands." And although the author states that his first knowledge of its appearance in the United States, was in the winter of 1871, Prof. Large's articles appeared in the *Veterinarian* in 1860, and the disease has been known here for at least thirty years. Prof. Large claims that belladonna is THE medicine indicated in this disease. That having an increased supply of blood sent to the meninges of the cord, our aim is to reduce the excess of blood to the parts by administering a medicine which will contract the capillaries. If the deductions of such men as Harley, Brown, Sequard and Foster are reliable, belladonna should be used in this disease without a doubt, and that too with very favorable results, yet as I stated when speaking of strychnia I have seen just as favorable results from the use of that drug, from the very commencement of the disease as from using belladonna. The article in Williams' works considers it best to regulate the bowels without the use of cathartics, while I have found that a good brisk purgative does much good, not as a *stimulant*, but by unloading the system rapidly, of a large amount of the poison contained in the serum of the blood. The same author in speaking of the *pulse* says "as the disease advances and the patient becomes weaker it increases in frequency and is *strong* and *wiry*. When speaking of the treatment of the disease, he says "he has found the use of atropine very efficacious." Can a medicine that increases the heart's force of action, and contracts the arteries, be indicated where you have a strong and wiry pulse? Do we have a *strong* and *wiry* pulse as the animal grows weak from this disease? Lastly belladonna is recommended in all the inflammatory diseases affecting the pelvic organs as well as being a homeopathic remedy in treating bowel troubles. In the Summer of 1873 I treated a case of rupture of the vagina, the accident occurring at time of coition, with belladonna and had recovery in two weeks' time, although another case in a few weeks after died from peritonitis.

A FEW REMARKS ON CHRONIC LAMENESS IN HORSES' FEET

One of the most important subjects connected with the study of veterinary medicine and surgery, is lameness in the feet of horses: important for two reasons, first, because the diseases producing lameness have generally been misunderstood in some respects, concerning their causes and character, and secondly on account of their frequency and the great depreciation in values and loss of usefulness in consequence thereof.

It would be difficult perhaps to calculate the immense damage arising from lameness in horses, in a large city like New York, Philadelphia or Boston every year, but they who are conversant with the subject know that it would reach to a large sum, one which would astonish people who know but little about it, or have given it no thought whatever.

During all the time the veterinary art has received attention from educated men, from its earliest records up to the present time, we learn that the chief maladies affecting the serviceable working condition of horses, have existed in their limbs and feet. Unfortunately however the investigation of early veterinarians were not pursued in the right direction, or productive of good results, either in gaining correct information concerning the physiology and pathological condition of the structures involved, or in the prevention and treatment of the diseases causing lameness.

A slight review of a few of the teachings of early authors will show that a large amount of error has been written and generally accepted, while at the same time it will furnish but a little that is really useful or even practicable from which benefit may be derived. As a general thing we find that most authors who have treated the subject of foot-lameness, have had some hobby either in regard to the physiology of certain structures involved, with relevant methods of paring the feet and applying shoes; or in favor of curious and uncommon shapes and kinds of shoes and methods of nailing them on; all of which were intended to assist nature by accommodating or aiding some supposed function of the foot, or some of its parts, to perform that function with greater ease and at less expense to the foot, than it could do without such mechanical aids; but all of which have failed to accomplish what was intended by their originators, on account of possessing but few if any other merit than that one of novelty, from misapplication and for other reasons apparent to all familiar with the experiments, their practical application and known results.

We learn for instance that Colman was the cause at one time of having certainly one-half of the horses in London, shod with shoes thick at the toe and thin at the heels, something in the same manner as we see horses shod at the present time with what are known as the "Goodenough" shoes for the purpose of producing frog-pressure, it being taught that this pressure upon the frog would brace the heels open when the foot was trod upon and prevent what was known as contraction of the hoof.

But a little time developed that pressure applied to the frog at the expense of correct position of the foot and limb, was in itself a cause of other diseases than that it was

intended to prevent and cure, and at the same time all the good results which possibly might have been derived from distributing the weight bearing surface over a greater portion of the bottom of the foot, was more than offset by the practice of thining the sole of the foot, to allow it to spring easily up and down, as he taught was the requirement of the normal or healthy foot. The non-success of the frog-pressure shoe caused it to be discontinued, but it appears that its author discovered another place, viz.: that of protected frog-pressure.

Falsely supposing the reason or cause of its failure to consist of the fact that the sensitive frog became irritated and bruised from too forcible contact of the horny frog with the hard or paved roads, he applied artificial frogs made of rubber, in order that the horny frog might not receive the direct blow in coming to the ground, but that the required pressure might still be exerted on the frog.

Then Bracy Clark labored long and earnestly to show that the foot became diseased only from confinement, by wearing an unyielding iron shoe, nailed to the hoof preventing the lateral expansion consequent as he supposed upon its coming to the ground and bearing the superincumbent weight.

Interference with this important motion of the hoof, prevented exercise considered necessary for the health of the internal foot and pain and discomfort were the results as he says from thus confining it "as within a vise."

Now, allowing he had pointed out the cause of diseased condition of the foot and that they originated from a "ruinous defect" in the application of shoes, the remedy would have suggested itself to any man of ordinary ingenuity as it did to him; so he invented the well known jointed shoe, consisting of a shoe made in two halves of the ordinary shape and having a joint or hinge at the toe. Being nailed to the hoof in the ordinary way the hoof might open and close all it required to.

James Turner a brilliant writer who first gave prominence to navicular thritis as a cause of lameness, also sought by a specific plan of shoeing to modify and prevent chronic lameness, in a manner similar to that adopted by Clark. Viewing the cause of disordered and painful conditions of the feet to consist chiefly in the fettering influence of the shoe as it was commonly applied, he invented the extremely simple means of allowing the inner quarter of the hoof to expand, by nailing the shoe to the outer quarter and toe of the hoof only, leaving the inner quarter entirely free.

He offered many plausible reasons to show why the unilateral or one side nailed shoe should be used universally, but for evident reasons it shared the same fate as have all other specialties of its kind and was discarded after being proved a failure.

It would be very easy to refer to and quote from other authors who have affirmed and in some instances exceeded the ideas of the three spoken of, but it is not necessary for my purpose.

I am aware in choosing the subject now being considered, that I have selected one in which there is almost an endless amount of material for discussion, or for the production of similar papers, so my desire is to introduce only just a sufficient amount of what has already been written to make my meaning plain.

My object in alluding to those writers and their methods of shoeing is not only to remark the fact that the specialties invented by them were of an unscientific and unworthy kind, but also that being founded upon an unsubstantial and worthless basis, there was no possible need of their ever having been adopted.

Almost all of the so-called systems of shoeing for which so much has been claimed by their authors from the time of Lafosse down to the present day, have had for an

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object the prevention of contraction of the hoof, and although there is without doubt a distinct connection between a diseased condition of the internal foot and a dwarfed diminished appearance of the external hoof, I have the confidence to believe that no one who listens to the reading of this paper tolerates the belief that there exists an inherent tendency in the hoof itself to contract, or that such contraction of the hoofs, occurs as it was formerly taught, as a primary condition, affecting subsequently the internal sensitive tissues, which it protects and defends from injury. Consequently I believe that horses may be shod with ordinary shoes properly and intelligently applied, for many years, without suffering even the most temporary and slight inconvenience, except there exists as there does undoubtedly in a large majority of instances, a predisposition to inflammation and pain, influenced fully as much by other causes as by the wearing of shoes as ordinarily applied.

Previous to the discovery of the navicular disease, there was even among the veterinary profession, no thorough pathological knowledge of the diseases of the feet; the same being usually named from some prominent symptom defining the character and degree of the lameness itself.

Founder was the term mostly used to designate a condition, the exact idea of which nobody attempted to explain. It signified as it does to-day a "used up" condition, from which little hope was had for recovery.

The term coffin-joint disease was sometimes used and the term laminitis subsequently, as it is to-day.

Until within a short time I have used the term chronic laminitis myself, applying it to a condition which I believed existed of which the symptoms are those indicating a general uneasy feeling in the feet, which causes the animal to rest them alternately, to stand braced out, and to travel as if using the limbs in a manner to relieve pain in the shoulders.

And I have frequently heard other practitioners speak of such cases as cases of chronic laminitis. Chronic laminitis and navicular disease have in fact been the only two terms I have heard applied to those diseases the symptoms of which are best expressed by the term "grogginess" and I do not hesitate to confess that I have often repeated these words to owners of horses, with an air of assurance, wholly assumed. Like the man who had told one lie so often, he really believed it to be a truth; if at first I had felt any doubt about making diagnosis of cases, the exact morbid conditions of which I was not familiar with except from reading; as I grew older in practice I had greater confidence to repeat either of the two names alluded to, because I had used them so many times. They satisfied me as they undoubtedly have satisfied some of you and particularly have they been convenient in instances where my treatment failed to relieve lameness, affording a shield behind which I have often sought shelter.

Now I wish to be understood plainly as not disputing the frequent occurrence of navicular disease and chronic laminitis. That is not my object in the least, but I do protest against disposing of every case of lameness, even if it be of long standing in this way, and I wish to point out that quite as often, if not yet more so, other structures than those implied by these names, have and do suffer and become deformed and otherwise altered in structure, in a manner not generally known among veterinary practitioners, so far as my acquaintance extends, at least never referred to by them if observed and understood.

In the pathology of the horse's foot, I believe an omission has been made, not of trifling or hair-splitting distinction, but of grave importance, and it strikes me as being

singular, in view of the fact that it is quite common and particularly because the parts affected, are so important in the construction of the foot, that the disease of which I shall speak, has never been referred to, at length, in any veterinary work, at least so far as my knowledge extends.

The nearest approach to any mention I find made of it, is in Gamgee's work on "Horse Shoeing and Lameness" in which he gives an account of some peculiarly diseased and deformed coffin bones, illustrated by wood-cuts of unusual and interesting specimens.

It was not until after I had arrived at some of the conclusions, which I shall attempt to explain, that I happened to find in Gamgee's work the account of which I speak, and although written prior to my conception of such knowledge, I have read it with a good deal of pleasure, for it confirms much that I had thought out somewhat crudely and disconnectedly myself.

In order to be definitely understood I shall now state that in a large majority of cases of chronic lameness, I believe the cause to be inflammation of the periosteum of the coffin bone and of that bone itself; that I have reasons for believing this inflammation in many instances, to be of a rheumatic nature, and that in most all cases of chronic lameness, even where navicular disease is found it is the part primarily diseased.

I shall argue these propositions briefly for your consideration as follows:

The variety in size and shape of the hoofs of horses, is as great, perhaps greater than in the feet of man, so we should not expect to find the coffin bones alike, either in bulk or form in the feet of different horses, but for any one who possesses the ability to carefully and discriminately examine a number of these bones, and who has never done so—there remains a fine opportunity for observation and study.

I do not hesitate to express an opinion that more than one half of the number examined, be it large or small, will be found diseased, and have never yet seen what I considered a perfect one myself. Furthermore I have never read a correct description of a healthy coffin-bone, nor yet have I seen a drawing of one; but I have seen a few so nearly perfect, that I can imagine about what figure and external appearances the normal bone should present and know that the descriptions given by some anatomists convey wrong ideas of the appearances it should present.

A description of the coffin-bone by Percival in his anatomy is interesting in this connection, as showing that its author failed to distinguish the difference between a sound bone and one showing all the evidences of disease during life.

"The coffin-bone" he says "has everywhere a furrowed and porous surface, the furrows which run from above downwards and forwards, being most distinct inferiorly and latterly, and the holes or pores consisting of a large and a small set, of which the large set only are numerable or worthy of particular mention, the small ones being infinite and numbers of them even imperceptible."

"The inferior edge is notched or serrated particularly towards the sides where in places the notches widen into gaps in order to give passage to the bloodvessels to the sole." Finally he speaks of the bone as being "of a soft, spongy, fragile texture, its intrinsic stability being still further reduced by the canals pervading its interior for the transmission of blood-vessels and nerves."

Now to my mind this description is as faulty as it can be and unworthy a place in a book containing so much other useful and valuable information.

I should find it very difficult to write a true description of the coffin-bone, but I fancy I can give a few ideas concerning it, which will convey a better idea of it than

Percival has. It is somewhat furrowed and pierced with foraminae to be sure, but certainly not to the extent his words would lead one to expect. The roughened and furrowed aspect he speaks of will be found only on diseased bones, neither are its lower edges "notched and widened into gaps" to such an extent except as the result of disease.

The most casual examination also will demonstrate that it is not of a spongy, fragile texture.

If any of you believe it is a delicate and easily broken down structure, take a saw and cut one in two from the top downwards and you will be convinced to the contrary.

I find the external surfaces to be smooth compared with the description above given, slightly furrowed and numerously pierced with foraminae; but each furrow and its edges is smooth and well defined and each foramina has a smooth rounded ~~edge~~ at its entrance into the bone.

It has like the shaft bones a hard or compact tissue externally, its interior being somewhat hollow for the reception of the nutrient arteries. There is nothing about it to indicate that it is a spongy fragile structure, except the roughened surfaces having in some instances the appearance of being worm eaten, resulting from ulceration and absorption of its exterior surface-tissue, but it will be found from the solid character of the bony material of which it is composed, together with its shape and other characteristics, to be a bone of immense strength and solidity as the work it has to do, requires it to be.

Bracy Clark gives quite a lengthy description of the coffin-bone and also two finely executed steel engravings, one showing what he designates as a "shed bone," meaning, I suppose, one that had become shed or detached from its attachments during life. Evidently he did not know which was the healthy bone of the two or he made a mistake of some other kind.

What he calls the "shed bone" so far as I am informed, is the most normal appearing one, having comparatively a hard substantial surface, well protected by its natural compact tissue just the same as other bones of the limb above it. The notion that the coffin-bone is thoroughly covered with ridges and channels and presents a honey comb, worm eaten appearance externally and that it is porous and a frail structure from its surfaces to its centre, comes from reading such descriptions as these and from viewing morbid specimens mistaking them for normal ones.

I shall ask everyone interested in the subject to examine any collection of coffin-bones he may have access to, and see if he can find any two alike, even though they may belong to opposite feet of the same animal, as regards size, shape, number of asperities and depressions, channels, notches and other peculiarities belonging to, or not found in a healthy condition of the bone. I think after he has examined any number, great or small, that he will agree with me, that most of those examined will be found more or less affected by disease and if he is not satisfied that such is a fact, by calling on me, I think I can show him specimens that will convince him.

I shall not attempt any detailed description of morbid appearances, for I know that the changes in shape, size and external appearances, resulting from interstitial absorption and the ulcerative stage of inflammation exteriorly, would defy description.

It will be more profitable to speak of the causes productive of these changes and these I shall now consider.

It will be necessary to refer again to Percival for an account of the anatomy and physiology of the tissues involved.

In a description of the sensitive laminæ he speaks of an "elastic structure" occupying the space between the laminæ and the bone, as follows:

"This" he says "is a substratum of a fibrous periosteum like texture attaching the laminæ to the coffin-bone, in which it is that the property of elasticity resides to that remarkable degree usually ascribed to the laminæ themselves; indeed so elastic is it found to be that it can be made to stretch like india rubber. Its fibres take a downward and backward direction. At the same time it affords a commodious bed for the ramifications of blood-vessels issuing from the substance of the bone, in which they are (particularly in the stretched condition of this substance) protected from injury, compression and consequent interruption to their circulation.

"The laminæ" he says "are not so highly organized as the sensitive sole, or frog for the obvious reason that all the blood they require is an amount necessary for their own nutrition and for the secretion of the horny laminæ."

I shall not occupy any time to criticise any portion of this quotation. Percival like all contemporary writers held exaggerated notions concerning the elasticity of certain structures of the horse's foot. His description of this what he calls an "elastic structure" includes the periosteum of the coffin-bone abundantly supplied both beneath the sensitive laminæ and sensitive sole.

It is the nutritive tissue, containing the secreting vessels which supply the compact tissue of the bone with food, and affording a protection to the large vessels which pass into the interior of the bone for a similar purpose.

It is a complex structure composed of an outer or fibrous portion and a germinal or nucleated membrane continued into the Haversian canals of the hard or compact tissue, supplying it and the lacunæ with bone forming material. The outer portion forms the receptacle of the blood-vessels entering into the interior of the bone and the inner lining has a formative power of itself to reproduce bone from all subperiosteal exudates, as seen in the formation of splint ringbone and spavin.

So far from its being considered and described as a tributary of the laminæ, I should consider it the more important of the two, particularly in alluding to diseases of the feet, while the amount of work required of this tissue in maintaining a healthy condition of the parts underlying it, would appear to be very great, indicated by its abundant supply, as regards bulk and thickness.

The effects of inflammation of this periosteal covering would be apparent, in alteration of structure and form of the bone itself, and this is just what is found in almost every foot examined.

The coffin-bone receives the larger part of its nutrition from the blood-vessels, supplied to its interior, passing beneath or through its periosteum and through the foramen so plentifully seen on its outer surface. The branches of these nutrient arteries anastomose with those supplied by the periosteum entering the haversian canals and lacunæ.

Inflammation of the periosteum affects the health of the bone by constricting the bloodvessels encompassed by it, these limiting the amount of blood passing through them. Inflammation of the cancellated structure of the bone supervening or occurring at the same time, causes a blocking up of the haversian canals and canaliculi constituting what is known as the consolidative stage of inflammation of bone tissue, followed respectively by the rarefactive and ulcerative stages. 2

It is a well known pathological fact that the blood-vessels of a part become atrophied or decrease in adaptation to a part, until they contain no more blood, and furnish no more nutrition than is necessary to meet the diminished requirements of a

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structure or locality unused to any extent from disease, and there are instances in which fatty degeneration of bloodvessels has followed a similar degeneration of neighboring parts.

A sensation of pain in any part may temporarily increase nutrition, but it usually suspends it, in a degree. There is but little chance owing to the unyielding character of the hoof for hypertrophy of the structures contained within it, except by change of position. Neither do we find large exostoses on the surface of the coffin-bone.

The ordinary changes consist of diminution in bulk of the internal foot and a corresponding lessening in size of the hoof. Accompanying such phenomena will always be found the morbid conditions of the coffin-bone referred to, including alterations in its size, shape and position within the hoof and generally a condition resembling the rarefactive or ulcerative stage of inflammation, more or less, over all its surface.

It may be interesting in this connection to refer to some of the terminations of the disease known as acute laminitis or founder.

In most cases so far as we can judge it terminates by resolution without causing any alteration of structure and the animal appears to travel as well as ever. In others we get an exudate from the laminæ, between their surfaces and the horny laminæ causing a separation between them around the toe. But we find that the inflammation is not confined to the laminæ, as shown by the great and permanent injury done to the coffin-bone.

Its ravages here include all the possible forms of absorption and ulceration of its exterior surfaces above and below. In many cases there follows a complete breaking down or separation of the periosteum from the bone, the space between becoming filled with fluids and solid exudates, having no particular character or organization, together with sloughing of bone and other adjacent tissues. For this reason and for some others hereafter mentioned, I believe the term acute laminitis does not convey a correct idea of the disease, being insufficient in itself to thoroughly represent the amount or extent of the lesions made by the disease. The term Peditis or even Founder would much better express the condition of the parts, known to exist by the most unmistakable and indisputable evidences.

I expressed the opinion that inflammation of this periosteal substance resulted in many cases, both in its acute and sub-acute or chronic form, intrinsically from a rheumatic diathesis and must be expected to state my reasons therefor. I know very well long before this portion of my paper has been read, that many a quiet laugh will have been had at my expense and therefore I regret having come before you not fully prepared to maintain the positions I have taken. My convictions of being right, however, are firmly rooted and I shall not easily be moved from them except it can be shown conclusively that I am wrong.

My reasons for the rheumatic theory are few and may appear quite crude and simple.

In the first place the periosteum is a fibrous structure, the same most frequently affected by rheumatism in man.

I should not wish to be understood as inclining to the opinion that the periosteum is alone of all the tissues of the foot, the one affected, but I do not hesitate to express an opinion that it is the primary seat of most of the diseased conditions; other tissues and structures adjacent to it, being affected consequently.

Secondly in a condition of chronic inflammation of the feet, the symptoms vary in acuteness and hold on as tenaciously as in chronic rheumatism in man. Every one familiar with the symptoms of early sub-acute inflammation of the feet, knows that an animal so affected will appear much freer from pain some days than others and that

moderate exercise while it lasts, relieves the pain in a measure, and that such symptoms are characteristic of chronic rheumatism.

Thirdly from a similarity of symptoms between acute founder in the horse and an attack of acute rheumatism in man.

In both instances there is the same terrible suffering from pain, particularly when forced to move, or change position. I think the term acute rheumatism might well apply to that miserable plight, in which we often find horses we call "foundered" and for which condition the same causes might be attributed as might and would under certain conditions produce an attack of inflammatory or acute rheumatism in man.

The tendency or desire to throw the weight on the posterior parts of the foot to my mind is not an indication that "acute laminitis" is the cause of the pain, for the laminæ are found posterior to the body of the coffin-bone and on the inner surfaces of the bars of the foot. On the other hand, this peculiarity of position shows an effort to relieve the coffin-bone as much as possible from bearing weight, the flexor tendons and navicular bone doing a good portion of this work for the time being.

I find that an animal suffering from acute rheumatism of the feet, stands, when permitted to do so, comparatively free from violent pain, but if he is made to move, his suffering is such that he groans like a human being and it has suggested itself to me many times that there was pain in the tendinous insertions of the muscles and in the sheaths of the tendons as well, and that the malady was not entirely confined to the feet. The comparative suddenness of attack, either in the hind or fore feet in the horse and the apparent lack of exciting cause in some instances, corresponds with its development in man.

I believe it to be metastatic from the pleura, the peritoneum and other serious structures and I have seen it complicated in two or three instances with what appeared to be pericarditis, one of which cases was shown to Dr. Stickney, who diagnosed the case as it was presented at the time he saw it, as inflammation of the pericardium.

If the sensitive laminæ, a mucous tissue, was in that active stage of inflammation and the tendency to metastasis allowed to be as great as we believe it to be, I should not think it safe practice to excite the mucous membrane of the intestines with cathartics, as we do, as there would be serious danger of attracting the inflammation to that locality.

In what may be called passive inflammation of the foot, we see frequently in colts that have never been shod or worked the evidences of such disorder, even in yearlings and two year olds, not only observing the stumbling and soreness consequent upon pain and imperfect development, but the deformed and diminished outward aspect of the hoofs and inaction and non-development of the limbs. In such cases the ordinary exciting causes which are said to produce such forms of disease are lacking, so far as injury from shoeing and driving are concerned, so that we must look for something beyond where we have looked, to account for such manifestations of disease.

These are my reasons so far as I am able to give them for the rheumatic theory and they are not so full and convincing as I wish they were, or as I hope to furnish at some future time.

They satisfy me however as far as they go and I hope they will lead some one better qualified than myself to pursue the inquiry still further.

In this connection I believe examinations of the urine in cases of founder might develop something for or against my theory, and I believe the eburnation or porcellaneous change of the articular surface of the coffin joint may not be absent entirely in many cases of chronic lameness.

Respecting the development of navicular disease from causes connected with previously existing disease in other structures of the foot, I believe it may and very likely does come from overwork in the effort to bring the posterior part of the foot to the ground first, causing greater stress to be applied to the flexors and consequently to the navicular bone and its synovial membrane which becoming inflamed produces the effects so commonly and well known.

By way of illustration I will relate a supposable case of the development of chronic foot lameness, arising from one out of a great many constantly occurring causes, endeavoring to show how it was created and matured.

An animal is injured by unequal pressure of the shoe, or by the nails having been driven too closely to the sensitive foot—and is slightly lame.

Of course the foot is examined and if possible the cause of the trouble determined. Well what is usually done? Instead of leaving the shoe off and relieving the painful condition entirely as would be not only proper, but which I should consider imperative; the shoe is immediately replaced and "put on easy" as they say, perhaps with some tar or other dressing under a leather sole and the horse is put to work again. What are the consequences? The horse uses the foot as little as possible when at work, and rests it all he can when standing; it is to a great extent thrown out of use. The circulation is modified; the heat of the foot affects the elasticity of the hoof itself and this rigid condition of the hoof prevents still further its free use. The chances are, even from so slight a cause, particularly in a foot wherein disease already exists in a latent form, that we shall have a diseased and painful condition of the whole organ very difficult to relieve, if not extending beyond that condition amenable to treatment.

This simple explanation will, in a measure, answer for the whole, so far as causes are concerned, and with a proper understanding of the philosophy of nutrition and wear and tear will enable anyone to see how from trifling injuries serious consequences result, and the phenomena of contracted hoofs may be explained without thought of or reference to inquiries if the foot expands laterally, the sole springs up and down, the laminae-stretch, frog pressure theories, concussion upon hard roads, or anything of the kind.

I believe I have read about everything printed in the English language relating to lameness in the feet of horses, and I must honestly confess that for a long time I had no thoroughly clear, well defined idea of the pathology of those diseases which produce it, or of their causes, prevention and cure. I doubt if there is any subject belonging to medical or any other science, about which so many worthless and contrary opinions have been expressed. No man I think can study it as I have, without becoming thoroughly confused and at times discouraged, and when he comes to apply the treatment recommended to accomplish cures in the manner, and for the purposes prescribed he will be even more confounded and disgusted, as I have been quite often.

I have now learned to divest the subject of much of the complication which has rendered it inexplicable and prefer to understand some few things that are simple to having an indistinct and confused idea of unscientific and nonsensical theories. That kind of knowledge which is surrounded by mystery has a peculiar charm for some people, and they are heartily welcome to it so far as I am concerned.

I intended to allude to some of the results of treatment of cases of chronic lameness, but I find that my paper has already exceeded the limit marked out for it, and shall defer that until some other time. A large field I am confident lies open for investigation of the phenomena of wasted and imperfectly developed bones and muscles of limbs accompanying diseased conditions of the feet.

The extent to which any of the structures above the hoofs may become diseased by inaction involving lack of development, or by overwork of muscles, tendons and ligaments that have become unable to sustain severe exercise through loss of vigor, I am not prepared to state; but I hold an opinion that any of the defects manifested in the forward or hind limbs, the exact cause of which is unsettled, may be induced by a painful condition of the feet. The inquiry is one of so much importance that I believe it worthy of unprejudiced investigation, and I allude to it hoping that the subject may be taken up by some one who is well qualified and who has the time and opportunity for pursuing it. The diseases affecting the lungs, liver, kidneys and other internal organs of the horse are mostly similar to those affecting the same organs in man, and we have learned much and profited to a great degree from the investigations of pathologists who have written upon and taught so much that is valuable upon those subjects.

The pathology of the diseases causing lameness in the horse, including the various phenomena attendant thereof, and the circumstances surrounding the animal's usefulness and existence, differ in many respects from similar conditions affecting man.

The structures involved are different in kind, and have different requirements to fulfil, are differently located and subjected to vicissitudes and casualties, the diseases themselves are, *sui generis*. Consequently but little knowledge can be gleaned from works on human surgery, relating to or helping our diagnosis, or treatment of such cases, and the veterinarian is to an extent thrown upon his own resources for obtaining information respecting these matters. For this and for many other urgent reasons, investigation and study of cause and effect, in all the diseases affecting the sound condition of the feet and limbs, should be intelligently and unceasingly continued.

One of the objects aimed at in writing this paper is to provoke discussion, and I hope a full expression and interchange of ideas will occur in consequence of its departure from the ordinary routine of teachings, on matters to which allusion has been made.

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ERYSIPELATOUS CELLULITIS.

In May 1859, my attention was called by Mr. Drury to a chestnut gelding about twelve years old, a trotter recently purchased in Maine; on the tail was found an open sore discharging pus which was quite offensive to the smell.

The foreman stated that the animal had been bitten by another horse, the part was dressed and was healing rapidly. In three days, about three inches above was found a swelling which in a short time discharged pus similar to the other, after which another, until seventeen were present. On the tenth of June there was pointing on the right side of the anus; evidently an abscess had formed within and as the animal was greatly debilitated, the owner was advised to send him into the country. On the twelfth he was walked to my place, and was so weak when he arrived that he staggered; soon after the indications were that the abscess should be opened, which was done; a considerable quantity of pus escaped, a whalebone probe was passed about ten inches when there appeared to be an obstruction.

After describing the case to a distinguished surgeon of this city, he gave as his opinion that it was erysipelatous inflammation of the cellular tissue, and advised as treatment, a liberal supply of food, whiskey twice a day and to inject the fistula twice a day with Tr. Iodine, this advice was followed, the animal gained rapidly in strength and appetite, eating a peck of oats daily.

About the 20th of May a swelling appeared above, near the centre of the right side of the pelvis, in the region of the saero sciatic ligament, the horse soon became depressed, lost his appetite, and the pus ceased to flow from the opening by the side of the anus.

The enlargement before mentioned rapidly increased; as it was evident that a large quantity of pus was present, I opened it where the pointing was most prominent.

From the situation it was impossible for the cavity to empty itself, consequently a guttapercha tube was inserted into the opening while the pus was discharging, the tube acting as a syphon, the cavity was then injected with iodine; this treatment was continued about three weeks, the amount of pus evacuated gradually decreasing from one and one-half pounds to two or three ounces. The appetite increased, in fact there was a general improvement, except, occasionally a few drops of pus escaped from the opening by the side of the anus; there was no evidence that the horse was not entirely well.

In the latter part of September, he was daily led on the street, would trot fast and without any restricted action. I should have added above that he was turned out to grass for a few hours daily, getting a good feed of grass.

On the 9th of October, a bright sunny morning, he was as usual turned out; soon after the wind changed and came from the east. He was probably out about an hour; the next morning he was found to be in severe pain, straddled behind in walking. Diagnosis—Nephritis—Opium was given and repeated from time to time as necessary, which

mitigated the pain, hot cloths were applied to the loins. On the morning of the eleventh there was no improvement in his condition, suffering intensely except when under the influence of opiates. I requested of the owner, permission to kill him as I was satisfied that recovery was impossible; he declined from the fact that he owned but one half; the other owner not being accessible at that time. On the twelfth he died.

Autopsy same day, an examination of the thoracic viscera revealed no evidence of disease. Of the abdominal viscera, the stomach, liver and intestines were in good condition; the kidneys as they remained in situ were enormously enlarged. The right kidney was first examined—weight, five and three-fourths pounds, on section it was found to be indurated so that considerable force was used to divide it, of a yellowish white color, very firm throughout and not a particle of healthy kidney tissue to be found; it closely resembled a schirrous mass.

The left kidney weighed six and one-half pounds, and on section presented the appearance of an intensely congested organ, some portions were nearly black, while others were red.

On the right side commencing near the diaphragm was found what proved to be a cyst, running back to the anus; its diameter at either end was small, say seven-eighths of an inch, gradually increasing to the centre to three inches, it appeared to be composed of fibrous tissue, on cutting into the cavity, it was found to be nearly empty, its walls were quite thick and had evidently contracted, as the surface was quite uneven.

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CONTAGIOUS DISEASES IN CATTLE.

THE MEASURES NECESSARY FOR PREVENTING THEIR INTRODUCTION INTO THE

UNITED STATES AND CANADA.

GENTLEMEN:

I hope I may be excused for venturing to introduce this subject at this meeting—instead of a more scientific disquisition on some abstruse subject of Veterinary investigation; my object in doing so is to enable us to embrace this great opportunity of drawing the attention of the people, the press, and the legislature of these two great agricultural and stock raising countries, the United States and Canada, to this very important subject which has been too long neglected, but which for the safety of these countries can be so no longer—that of making some provision for the prevention of the introduction of those contagious diseases of cattle which have from time to time visited most of the European countries, carrying death and destruction from end to end of the land, followed by famine, disease, commercial depression, and all the miseries attendant on such a deplorable state of affairs.

At no time in our history did this subject claim attention so urgently as to-day—for at no time since its discovery, did America command so much attention as a great source of meat supply both in the living and preserved form. Within the last few years, the shipment of cattle and meats to Europe, both from the United States and Canada has assumed the proportions of a most important branch of commerce, which if judiciously managed, and the present healthy condition of our stocks maintained must soon become a rich source of wealth to both countries, and a great boon to European working men, to whom from the present high prices of inferior and often diseased meats, a roast of beef or a leg of mutton are luxuries rarely indulged in.

When we consider the enormous wealth represented by live stock in the United States and Canada, (in the former 100,322,600 animals which at a moderate valuation amount to the vast sum of \$1,647,719,138, in the latter 7,982,355 equal to \$133,866,567) we will be able in some measure to comprehend the great responsibility resting on the governments of these countries. In dealing with perishable property no people are more shrewd than we on this side of the Atlantic. As is evidenced by the prosperity of our insurance companies, we will readily pay large insurance premiums for the protection of our property, go to great expense of fire engines, fire companies, alarms, &c. We will spend freely millions of dollars on the paraphernalia of war,

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offensive and defensive—We will guard our coasts, and man our fortifications for the protection of our property from imaginary foes who seldom appear, yet strange to say we leave our ports open—nay, give every facility for the entry of an enemy which next to war would paralyze the whole agricultural and commercial industries of the Country. Gentlemen, this is no imaginary picture; how often has such an invasion passed like a blight over the whole length and breath of the British Isles, bringing ruin to hundreds of England's best farmers, seriously curtailing her food resources and reducing her working classes to a state of semi-starvation. I am well aware that many will say of us, as was said of Professor John Gamgee, that we are alarmists, that the fears expressed are groundless, but I have little doubt if no protective measures are adopted, like him, we will see the time when our rulers will wish they had listened to us, who at this centennial gathering humbly endeavored to point out their duty to the country, not to trifle with these diseases, but to take each step as will insure their own introduction into the country, an undertaking of little moment compared with that of eradicating them once they are produced.

Professor Gamgee in speaking of the diseases says: "The Epizootic disorders of cattle and sheep plagues, are traced invariably to the East. They spread entirely in the lines of communication established by war or trade between different countries, propagated by contagion, and contagion alone. Local causes influence their spread; but a careful study of their many outbreaks in different countries, demonstrates that the local causes consist chiefly in circumstances, which render the spreading by contagion most certain. These diseases commit great ravages wherever they spread, and especially in countries like our own where their nature is ignored, and no means adopted for their prevention. They are kept in check and totally prevented in some countries, either from the circumstances that breeding is exclusively carried on in them, or in virtue of wise laws which serve to protect the home produce from foreign importations."

That you may form some idea of the losses entailed by them by these diseases, I will read the following quotation from Mr. Fleming's valuable work on Veterinary Sanitary Science, who says: "up to 1869 for the thirty years that had elapsed since the introduction of the two contagious maladies, Foot-and-Mouth disease and bovine Pleuro-pneumonia it was estimated that the loss from these alone amounted to 5,549,780, head of cattle roughly valued at £83,616,854, (or about \$418,084,270). This is of course irrespective of Cattle Plague. There cannot be a doubt that the same rate of loss has continued, if it has not largely increased since that same period. In 1872 for instance from one malady only, Foot-and-Mouth disease, it was calculated that the money loss in Britain must have amounted to £1,000,000, (or \$65,000,000,) but some authorities are of the opinion that this is even ~~over~~ ^{under}estimated. In Ireland for the same year 220,570 cattle were reported by the ~~people~~ ^{as} affected by the disease, but this is undoubtedly only a tithe of the actual number, a declaration of its existence is the exception, not the rule. Nevertheless, if we estimate the loss on each animal reported at £2, (\$10) though it may be nearer £4, (\$20) we have £441,140, (or \$2,205,700) to be added to the above sum as the pecuniary loss incurred in the three Kingdoms from the existence of one preventable malady only. The damage inflicted by contagious Pleuro-pneumonia is probably not so much less as it is always prevalent; whereas the other is more diffused at some seasons than others."

These facts speak for themselves—and are sufficient to show the immensity of the losses entailed by these diseases in every country so unfortunate as to allow them to be

introduced; I say allow them to be introduced, for I am convinced that we have it in our power to prevent their introduction not by stopping importation, nor by any oppressive measures calculated to interfere with our commercial intercourse with infected countries, but, by a judicious yet thorough system of quarantine and disinfection at our ports of entry—and with the aid of government and the co-operation of the people I have no doubt but a judicious system which will serve to protect the property of the people without interfering with our foreign relations, or the liberty of the subject, can be organized and maintained at very little cost to the state or inconvenience to the public. Before proceeding to give you my ideas as to what should be done as preventative measures we will briefly look at the question of our liability to infection. On this subject I know there is some little diversity of opinion, some say that the sea voyage is sufficient to destroy the contagion, that so much care is exercised by importers in buying that there is so little danger of their risking suspected, much less diseased animals; that our climate purity and rarity of our atmosphere all tend to protect our stocks from contamination by these Zymotic diseases.

If we consider the periods of incubation (the time elapsing between the introduction of the virus and the development of the disease,) we will see that the sea voyage nor any precautions, which a buyer in a strange country can take, will be sufficient to insure against the importations of these diseases.

Pleuro-pneumonia has an incubation period of from three to six weeks, but in many cases this has been found to be less than the actual time—and as remarked by Mr. Fleming. "In this Country, (England) the Contagious Diseases (Animals) act, only admits a period of thirty days, and as after this time isolated animals are allowed to be removed and mixed with others, we need not be surprised to find numerous outbreaks among them, and among the cattle with which they have subsequently been mixed. The period of isolation is too short to be effective."

Foot-and-Mouth disease is said to have an incubation stage of from one to six days, usually three. Cattle Plague about the same period. It would thus appear that the former, Pleuro-pneumonia, is that most likely to be imported, and if these diseases were propagated by voluntary inoculation alone, such would unquestionably be the case, but when we remember the extraordinary contagious nature of them all, that one diseased animal may spread contagion in all directions, through the medium of whatever it comes in contact with, thus railroad cars, steamboats, wharfs, landing stages—not only so, but bugs, hay, the clothing of attendants are media by which healthy animals may be infected. It is thus quite possible for animals to be purchased in a healthy district, in perfect health, and so certified, but we well know the carelessness or indifference in carrying companies, in thoroughly disinfecting their cattle trucks, and how difficult it is to do so thoroughly in many cases, especially wharfs and steamboat sheds—and yet before the animal leaves the country it may have received the virus into its system, and perhaps the disease in a mild form breaks out when a few days at sea, and thus the whole shipment becomes affected. Again we know from experience, that importers are sometimes so unfortunate as to have disease appear after purchase and before being shipped, and if in case of Foot-and-Mouth they are left till they recover, they are sure to be hurried off, and ten to one they will contaminate everything in their line of trail, the bags carrying their feed, the hay, in fact everything connected with them are dangerous to other animals. Such cases I have known to occur, but thanks to the good sense of the owners in adopting the only safe method, complete isolation and the cessation of cattle shipments in a great measure

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during the cold frozen months, it was checked, otherways we might have had in Canada a wide spread visitation of the unwelcome Foot-and-Mouth disease.

In view of our rapidly increasing importation which even now are considerable at one Canadian Port alone, Quebec (where our government has wisely established a quarantine where we place all cattle, sheep and swine for eight days, and subject them to inspection and disinfection) 104 cattle, 336 sheep, 23 swine have this season already been imported from European ports—mostly from England. Hitherto these cattle were allowed in Canada, and still in this Country, to be transferred direct from the ocean steamer or ship to the inland steamer or railroad truck without any inspection, and spread over the whole country—now I may ask whether this, as a matter of business, would be looked upon as a par with the shrewd business precautions of our merchants. Does it not seem even to the importers themselves as a very "penny-wise and pound foolish" way of doing business, and does a government which allows such a state of matters to continue not assume a very serious responsibility in thus exposing the people who elect them to the positions of trust and honour to which they are appointed for purpose of framing and carrying out wise laws for the protection and well-being of the lives and property of the people. Gentlemen, we cannot urge this subject too forcibly; we should have but one voice on this question—or our profession will lack in its duty and indirectly must share the responsibility: should our noble herds be invaded and destroyed by disease, which is so easily prevented, but so difficult to deal with once it is amongst us. I have been told that we are quite safe, as these diseases are disappearing in England, that the precautions taken there are sufficient to ensure us against any diseased animals leaving the country. To show you how untrue this is I will take the liberty of reading an article from the *North British Agricultural* on the subject, November 3d, 1875.

"Foot-and-mouth disease has prevailed very generally and seriously throughout the Midland countries of England. Observant and experienced stockowners declare that during the past summer it has been unusually virulent; that sheep, hitherto infrequently slight sufferers have been attacked as frequently and severely as cattle; that losses quite equal to those caused by cattle plague have been entailed; that the measures enjoined for its suppression are lamentably weak and ineffectual; that fresh outbursts of the disease are constantly traceable to the droves of Irish cattle which travel the Western and Midland countries. Careless negligence and culpable reticence are complained of in reporting outbreaks of disease. From infected herds and flocks animals still apparently sound are picked out, and with selfish inconsiderateness, are sent to the public markets and sales, where they disseminate contagion. The inspection of these public fairs or sales, where the cattle or sheep from many sources are congregated, is seldom effected with requisite care or at the proper time. Instead of being present whilst the stock are entering the markets or fairs, and when the infected or suspicious subjects, if discovered, might be stopped, and their power of doing harm minimised, inspectors under existing arrangements usually appear on the scene an hour or two after the stock are "placed," and after sick animals have enjoyed ample opportunity of infecting their sound fellows. This is provokingly lax practice. The magistrates presumed to understand, interpret, and carry out most of the provisions of the Contagious Diseases (Animals) Act, have some of them strange and inexplicable views relating to foot-and-mouth disease, and regard with unpardonable leniency those who carelessly and wantonly traffic in disease. In some quarters magistrates can scarcely be brought to punish persons who disregard and disobey the Council orders,

and thus expose to risk and loss and deterioration the valuable live stock property of their neighbors.

"Under such irregular and purposeless system of attempted suppression there is no wonder that the disease still continues so generally to prosper. Throughout Great Britain half a million of cattle beasts a week ago were still reported affected. Presuming that each beast undergoes a deterioration of 40s a head, here is a loss of a million sterling. But during the last few months certainly five times the number of patients have been attacked, representing the very serious loss to agriculturalists and to the community at large of five millions sterling. The losses amongst the sheep and swine, seldom reported by the Privy Council authorities, unfortunately represent a further loss of from one to two millions sterling.

"Smarting under these serious losses, which on many stock farms have been equivalent to a deficit of 20s per acre, and with a growing dissatisfaction with the present Privy Council regulations, the members of the Warwickshire Chamber of Agriculture, at a recent meeting, discussed and passed the following sweeping and stringent resolutions, which have further the merit of simplicity and uniformity, and, if carried into effect, would in a few months effectually clear the country of foot-and-mouth complaint. The fourth resolution, preventing the removal of cattle, sheep, and swine, excepting with a special licence from a properly constituted authority, may be regarded as unnecessarily severe, but its severity would chiefly be felt by drovers and dealers who, wittingly or unwittingly, are the chief disseminators of contagion. In every village throughout the country one or more men of sense and probity, who would have a ready opportunity of learning the sanitary state of their neighbours' herds, would be authorized to grant the requisite "moving" licences, and, as has already been done in some districts of Aberdeenshire, would refuse to allow the progress through the county of infected or suspicious herds. With a few weeks' strict isolation of infected stocks, with stringent means adopted to prevent the importation of fresh virus, whether from the Continent or from Ireland, the disease would speedily die out, and neither licences nor hindrances would then require to be continued in regard to the internal cattle traffic.

"The following are the resolutions recommended by the Warwickshire Chamber, and yesterday submitted for the approval of the Central Chamber:—

1. That fat cattle, sheep, and swine from abroad should be slaughtered at the ports of embarkation.
2. That cattle, sheep, and swine from the Continent of Europe, as well as from Ireland, unless for immediate slaughter, should be subjected to six days quarantine and inspection before they be moved from the British ports at which they are landed.
3. That uniform and stringent measures should be adopted throughout Great Britain and Ireland to stamp out "foot-and mouth" and other foreign diseases.
4. That neither cattle, sheep, nor swine should be removed from landing ports, farm premises, or pastures, to markets, fairs, or public sales, without special licence, given by duly appointed authorities.
5. That infraction or regulations should be visited by pains and penalties."

These remarks will serve to give you an idea of how much the farmers in England have come to dread these diseases when they not only suggest but urge on the government regulations all but prohibitory. From the monthly reports published in the "*Veterinarian*" you will observe that Cattle Plague, Pleuro-pneumonia, Foot-and-Mouth Disease, and Sheep-Pox are at present prevailing in almost all parts of Europe. Not only are measures necessary for the prevention of foreign diseases, but; it is also

necessary to make such regulations as will hold in check all diseases of a contagious nature in the country, especially glanders in horses. It is impossible to produce any statistics of these diseases either in this country or Canada, but I have no doubt our united testimony as practitioners from different parts of both countries will go far to show that it is not inconsiderable. As you are aware the American Government themselves were heavy losers by Glanders in the horses of the 1st Cavalry stationed at Benicia, California, during last year. In almost every city in America cases of Glanders from time to time appear.

I speak more authoritatively for our own country and say that no restrictions are practically put upon the wholesale spreading of these diseases, and it is no uncommon occurrence to see glandered horses moved about on boats, driven into market towns, stabled in public stables, and offered at public auctions, without any interference authorized by government, and it is only when some poor groom dies a most horrible and loathsome death being inoculated by a glandered animal, that the authorities can be induced to take any notice of it, and I am told that in this country it is not any better.

The question which I wish more particularly to hear discussed to-day is "what under present circumstances ought to be done to prevent the importation of these foreign diseases, and for the prevention and suppression of contagious diseases originating in the country?"

In my mind there is but one way and that is, for the governments to give to the Veterinary Profession that recognition which a science of such paramount importance deserves. Who are capable of advising government on matters relating to stock if not this profession? It is a standing reproach to this great country that so far we have received almost no encouragement at the hands of the government; true a few qualified members have occupied the position of Veterinary Surgeon to Cavalry regiments, but they have neither the rank nor pay which officers holding such important positions should have.

I will take the liberty of suggesting, that the ports of entry for cattle from transatlantic countries be limited to a small number, and that at each of these a quarantine be established where cattle, sheep and swine must be landed, and kept for a period, say of eight or ten days. That it be not permissive but imperative. The arrangements of the quarantine to be such as will allow of the complete separation of all suspected and diseased animals from the healthy—having isolated sheds for each class. The owner of the stock to pay for all the food and attendance during the time they remain in quarantine.

The government ought certainly to appoint a Veterinary department, both civil and military. The former to manage all matters relating to Veterinary Sanitary measures. That none be appointed to any position as inspectors or Veterinary Surgeons to regiments except regular graduates of recognized college. Each state should have its own consulting Veterinary Surgeon paid by the state who could be consulted and deal at once with any outbreak of disease.

I am proud as a Canadian to have it to say that our government have set yours a good example, in establishing a system of quarantine, and having but three ports of entry for stock, viz:—St. John's, Halifax, and Quebec, where all stock are detained for eight days, subject to close inspection, and every article accompanying them carefully washed and disinfected, and in this way we hope to be able to preserve our present happy state of immunity from disease, and I hesitate not to say that the trifle which it

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costs the Canadian government is repaid a hundred times over by the very fact of foreign buyers being certain that we have no disease, and this fact must show the English government the absurdity of subjecting our healthy stock to quarantine at their ports, and I have no doubt but that detention will soon be removed as it should be.

Gentlemen, I will not detain you by going into the details of the sanitary measures necessary in event of these diseases being introduced—but will simply indicate it by two words, which signify a very great deal in any country so unfortunate as to require it, "*Stamping Out.*" Prevent while we can so easily and avoid the necessity for the destroying process.

In conclusion gentlemen I would suggest to this association, that you should approach the government and point out the necessity for preventative measures being adopted, and urge upon them the importance of recognizing this profession, and ceasing to appoint uneducated men to positions of responsibility, while you have young men educated in science, both able and willing to fill the positions. Let our motto ever continue to be "*Vis Unita Fortior*" and instead of our noble science, for what science next to human medicine can be more noble than that whose object is the relief of suffering in those poor dumb animals, which God has given to us to care for, being looked upon as scarcely respectable, we must and will stand side by side with all the other liberal professions, and I certainly do think that if we can bring about the objects of this paper we will do much to deserve the lasting thanks of this great people.